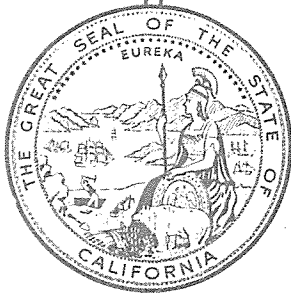


5/23/79

STATE OF CALIFORNIA  
AIR RESOURCES BOARD



CHAPTER 4  
CALIFORNIA  
AIR QUALITY CONTROL STRATEGIES

REVISION TO  
STATE OF CALIFORNIA  
IMPLEMENTATION PLAN  
FOR THE  
ATTAINMENT AND MAINTENANCE OF  
AMBIENT AIR QUALITY STANDARDS

APRIL 1979

CHAPTER 4  
CALIFORNIA AIR QUALITY CONTROL STRATEGIES

Revision to  
STATE OF CALIFORNIA  
IMPLEMENTATION PLAN  
  
for the  
  
ATTAINMENT AND MAINTENANCE OF AMBIENT  
AIR QUALITY STANDARDS

Adopted by the  
California Air Resources Board

April 25, 1979

Tom Quinn, Chairman  
Dr. Marjorie Evans, Board Member  
Dr. Laurence Caretto, Board Member  
Dr. Alvin Gordon, Board Member

## FOREWORD

This chapter outlines the control strategies currently being implemented in California as well as those proposed as part of the nonattainment plans adopted by local agencies and proposed for adoption by the Air Resources Board (ARB). These strategies have been considered by local agencies involved in the preparation of nonattainment plans pursuant to the 1977 Clean Air Act Amendments. This chapter should be used in conjunction with such plans.

This chapter was considered by the ARB at an April 1979 public hearing and adopted as an SIP revision for submittal to the Environmental Protection Agency.

The chapter is complete except for Sections IB and IC which are being rewritten to reflect ARB's current policy regarding transportation control measures. These sections will be added to this chapter when they are completed.

Questions regarding this chapter can be addressed to:

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## TABLE OF CONTENTS

Introduction .....	1
I. Vehicular Sources .....	4
A. Technical Controls - Overview .....	4
1. Emission Limitations .....	4
2. Fuel Content Limitations .....	8
3. Future Technical Controls .....	8
a. Emissions Standards for New Vehicles .....	8
b. Motor Vehicle Inspection Program .....	10
c. Control of Emissions From Fleet Vehicles .....	11
d. Control of Emissions From Other Vehicular Sources .....	11
e. Other Than Light-Duty Vehicle Retrofit .....	11
f. Other Measures .....	12
B. Existing Transportation Controls .....	*
C. Future Transportation Control Measures .....	*
II. Non-vehicular (Stationary Source) Controls .....	13
Introduction .....	13
A. Rules Presently in Effect .....	13
Particulate Matter .....	28
Burning .....	30
Organic Compounds .....	31
Sulfur Compounds .....	33
Other Pollutants .....	34
General Provisions .....	35
Permit System .....	40
New Source Review .....	41
Fees .....	42
B. Model Rules .....	43
1. Model Rule Process .....	43
2. Model Rules: Approved and Planned .....	45
Category I	
Organic Compounds .....	50
Oxides of Nitrogen .....	56
Oxides of Sulfur .....	56
Particulate Matter .....	57
Category II	
Oxides of Nitrogen .....	58
Category III	
Organic Compounds .....	59
Oxides of Nitrogen .....	61
Oxides of Sulfur .....	62
Category IV	
Organic Compounds .....	64
Oxides of Nitrogen .....	65
Oxides of Sulfur .....	65
Particulate Matter .....	67

\*To be included in a future revision.

Category V	
Organic Compounds .....	68
Oxides of Nitrogen .....	68
Oxides of Sulfur .....	69
Particulate Matter .....	69
Category VI	
Organic Compounds .....	70
Oxides of Sulfur .....	70
Oxides of Nitrogen .....	71
Particulate Matter .....	71

## LIST OF TABLES

Table 4-1	Trends in New Passenger Car Emission Standards in California .....	4
Table 4-2	1978 Emission Standards for New Passenger Cars, Light and Medium-Duty Trucks by CVS-II Test Procedure .....	5
Table 4-3	1979 Emission Standards for Heavy-Duty Vehicles .....	5
Table 4-4	1980 and Future California and Federal Exhaust Emission Standards for Passenger Cars, Light and Medium-Duty Vehicles .....	9
Table 4-5	Future California Exhaust Emissions Standards for Heavy-Duty Vehicles .....	10
Table 4-6	Transportation Control Measures by Nonattainment Areas .....	*
Table 4-7	Rule Numbers of Control Regulations in Effect as of January 1, 1979 by Air Basin .....	14
Table 4-8	Status of NSPS/NESHAPS Delegation to Local Air Pollution Control Districts as of January 1, 1979 .....	39
Table 4-9	ARB Schedule for Adoption of Rules .....	46

\*To be included in a future revision.

## APPENDICES

- Appendix 4-A            Addresses of Local Air Pollution Control Agencies
- Appendix 4-B            Category I Model Rules for Stationary Sources - Available separately from the ARB.

The following appendices are portions of the California Administrative Code. Persons interested in these appendices should refer directly to the code.

- Appendix 4-C            ARB Sandblasting Standards, included in Title 17, California Administrative Code, Section 92000 (Refer to code)
- Appendix 4-D            ARB Gasoline Vapor Control Procedures, included in Title 17, California Administrative Code, Section 94000 (Refer to code)
- Appendix 4-E            ARB Vehicle Emission Controls included in Title 13, California Administrative Code, Chapter 3, Subchapter 1. Motor Vehicle Pollution Control Devices, Subchapter 2. Enforcement of Vehicle Emission Standards and Surveillance Testing, Subchapter 3. Highway and Mandatory Inspection Emission Standards, Subchapter 5. Standards for Motor Vehicle Fuels, and Subchapter 7. Specifications for Fill Pipes and Openings of Motor Vehicle Fuel Tanks (Refer to code)
- Appendix 4-F            ARB Agricultural Burning Regulations included in Title 17, California Administrative Code, Section 80100 et seq. (Refer to code)

## Chapter 4

### CONTROL STRATEGIES

#### INTRODUCTION

The Clean Air Act Amendments of 1977 set forth requirements for major revisions to the California State Implementation Plan (SIP). The 1979 submittal to EPA requires incorporation of a nonattainment plan (NAP) for each area in the state that is not now attaining national ambient air quality standards. (In California, 26 areas were designated nonattainment for one or more pollutants although Board action may propose that some areas presently designated nonattainment may be redesignated unclassified or attainment because of the recently revised ozone standard.) A key component of the locally adopted NAPs is the control measure package selected as the basis of the strategy for attainment.

This chapter of the SIP outlines California's overall control strategy which includes control measures being implemented at both the state and local level. It also outlines the direction the ARB and local agencies are moving to develop and implement future control measures. The presentation is divided into two categories: vehicular and nonvehicular controls.

Exhaust emission controls for vehicles have been in effect in California since 1960. Overall, California's standards have been more stringent than those established by the federal government for the other 49 states. Compliance with the established emissions standards will continue to result in reduction of emissions in the future as the vehicle mix becomes comprised of a larger fraction of later-year models which have progressively more stringent controls applied to them.

Some of the NAPs contain vehicle related emission control tactics. It is unclear at this time whether these measures will be accepted for inclusion in the SIP submission as attainment or as maintenance measures.



The Executive Officer has been directed by the Air Resources Board to make this determination after consultation with the appropriate local agency officials.

In addition to control measures limiting exhaust emissions, there are other measures that reduce emissions by reducing dependence on the motor vehicle, providing more efficient use of motor vehicles, or reducing their use. These are known as transportation control measures (TCMs).

The EPA has defined 18 types of TCMs listed in Section 108(f) of the Clean Air Act as "reasonably available." If an extension beyond 1982 for the ozone or carbon monoxide standard attainment is requested, all 18 TCMs must be implemented or adequate justification provided for rejecting any of these measures that are considered locally unreasonable.

Because of a general deficiency in time and resources needed to perform thorough analyses of the 18 TCMs as required for the 1979 submittals, many measures will be re-examined during the continuing planning and implementation program. Due to the complexity of issues involved in the adoption of TCM, a great deal more work and support and the involvement of the state legislature, Congress, and the auto industry is essential to insure the success of the program.

One of the TCMs, a program designed to insure the effectiveness of vehicle emissions standards, is the Motor Vehicle Inspection Program (MVIP). Just as for the 17 other TCMs, the Clean Air Act requires that all areas not demonstrating attainment by 1982 for carbon monoxide or ozone must implement an MVIP. NAPs submitted to date recognize this requirement. However, local and state jurisdictions lack the statutory authorization to implement an annual MVIP. The Legislature needs to provide appropriate enabling legislation. The EPA is requiring the Governor's commitment to obtain such legislation as a part of the 1979 plan, and that enabling legislation be enacted by July 1, 1979 to qualify any area for an extension. Legislation (Senate Bill 84) was introduced early in 1979 to allow the state to implement MVIP at the request of local agencies.

Another requirement for an adequate NAP is that stationary source control measures be included for 11 source categories that EPA has identified unless there are no such sources in the nonattainment area. EPA guidelines for these categories are known as control technology guidelines (CTGs). The categories are as follows:

1. Surface Coating of Automobiles and Light-Duty Trucks, Cans, Metal Coils, Paper, and Fabric Products
2. Surface Coating of Metal Furniture
3. Surface Coating of Large Appliances

4. Surface Coating for Insulation of Magnetic Wire
5. Petroleum Liquids in Fixed-Roof Tanks
6. Bulk Gasoline Plants
7. Gasoline Loading Terminals
8. Service Stations Stage I
9. Miscellaneous Refinery Sources
10. Solvent Metal Cleaning
11. Cutback Asphalt

In addition to measures concerning the above 11 categories, EPA requires that NAPs provide for the adoption and submittal of additional control measures within one year after publication of subsequent guidelines. The ARB staff has already developed model rules for several categories of sources for which rules will be required by EPA at a later date. The staff believes these additional rules constitute reasonably available control measures. The ARB staff has developed model rules for all but three of the 11 categories presently required by EPA: cutback asphalt, insulation of magnetic wire, and miscellaneous refinery sources. A regulation for insulation of magnetic wire is being developed by the South Coast Air Quality Management District, where the only California source in this category is located. The rule for cutback asphalt along with rules for miscellaneous refinery sources and many additional categories of importance for California will be developed on a schedule that the ARB staff believes each district should commit itself to (see Table 4-9). The review of draft NAPs indicates that most demonstrate the intent to meet EPA and ARB policies on model rules, but most lack detailed regulations or commitments which would clearly define the rules.

## I. Vehicular Sources

Control of emissions from vehicular sources is approached in two ways. Technical solutions are used to limit the amount of pollution per vehicle mile traveled and transportation controls are implemented to reduce dependency on motor vehicle, and provide more efficient use of these vehicles.

### A. Technical Controls - Overview

Most vehicle emissions are introduced to the ambient air through the vehicle exhaust system. The combustion of fuel produces carbon monoxide (CO), nitrogen oxides (NOx), unburned hydrocarbons (HC), lead particulates, and sulfur compounds. Evaporative losses from vehicle fuel systems are also a major source of HC emissions as are crankcase "breathing" emissions.

The California SIP reduces emissions of CO, NOx, and HC by imposition of exhaust, crankcase, and evaporative emission standards on new vehicles. Lead and sulfur compounds are controlled by regulating their content in fuel (gasoline).

#### 1. Emission Limitations

Table 4-1 shows the trend in passenger car exhaust emission standards to date.

Table 4-1

Trends in New Passenger Car Emission  
Standards in California  
grams per mile

	1965	1970	1975	1979	Total Reduction (1965-79)
Carbon monoxide	87.0*	34.0*	9.0	9.0	90%
Total hydrocarbons	8.8*	4.1*	0.9	0.41	95%
Nitrogen oxides	3.6*	4.0*	2.0	1.5	58%

\*Average values for in-use vehicles. These are not standards.

The following tables show California and federal standards for passenger cars and other regulated vehicles for 1978.

Table 4-2

1978 Emission Standards for New Passenger  
Cars, Light and Medium-Duty Trucks  
by CVS-II Test Procedure  
grams per mile

Vehicle Type	Test Weight lb.	California**			Federal		
		HC	CO	NOx	HC	CO	NOx
PC	All	0.41	9.0	1.5	1.5	15	2.0
LDT	0-3999	0.41	9.0	1.5***	1.7	18	2.3
LDT	4000-5999	0.50	9.0	2.0	1.7	18	2.3
MDT	All	0.9	17.0	2.8	1.7	18	2.3

\*The CVS-II Test Procedure is also discussed in Chapter 23.

\*\*See California Administrative Code, Title 13, Chapter 3, Section 1959.5.

\*\*\*2.0 for four-wheel drive vehicles in this category.

Table 4-3

1979 Emission Standards for Heavy-Duty Vehicles\*  
grams per brake horse power hour

Standard	Hydrocarbons	CO	NOx	HC+NOx
California	1.5**	25	7.5	-
or		25		5
or	1.0***	25	7.5	
Federal	1.5	25		10
or		25		5

\*\*By Flame Ionization Detection.

\*\*\*By Non-destructive Infrared. See California Administrative Code,  
Title 13, Chapter 3, Section 1956.5.

Motorcycles are also controlled by California or national  
exhaust emission standards beginning with 1978 models.  
See California Administrative Code, Title 13, Chapter 3,  
Section 1958.

<u>Model Year</u>	<u>Displacement (in cubic centimeters)</u>	<u>Exhaust Emissions (grams per kilometer)</u>	
		<u>Hydrocarbons</u>	<u>Carbon Monoxide</u>
1978-1979	50 to less than 170	5.0	17
	170 to less than 750	5.0 + 0.0155 (D-170)*	17
	750 or greater	14	17

\*"D" = Displacement in cubic centimeters.

Overall, California's standards for 1977 model year motor vehicles are more stringent than those established by the federal government for the other 49 states.

Emissions from some in-use vehicles in California are also controlled through mandatory retrofitting with certain control equipment. This requirement is usually imposed when vehicles are initially registered (as when coming from another state or foreign county) or re-registered because of a change of ownership.

Throughout the state, for example, 1966-70 light-duty vehicles must install NOx control devices (exhaust gas recirculation or vacuum spark advance disconnect) when being registered initially or changing owners. (See California Administrative Code, Title 13, Chapter 3, Sections 2008 and 2007.) In 16 counties or portions of counties (those in the Bay Area, South Coast, and San Diego Air Basins, plus Ventura and Santa Barbara Counties in the South Central Coast Basin) 1955-65 models must install a HC/CO/NOx device (also vacuum spark advance disconnect) under the same conditions.

Crankcase emissions (breathing losses) have been fully controlled on all new vehicles in California since 1964. Organic gases are emitted by evaporative loss through vents in the crankcase. These losses have been eliminated by sealing the crankcase and extending the vent lines to return the gases to the carburetor for subsequent combustion. The ARB has estimated that crankcase emissions from 99% of all passenger cars in the state's metropolitan areas are effectively controlled.

Fuel evaporation is also a significant source of emissions from motor vehicles. Organic gases are emitted when fuel evaporates from the gas tank or the carburetor. Since 1970, gasoline evaporative emission control systems (essentially a network of return lines to collect vapors and store them for subsequent combustion in the engine)

have been installed on all new light-duty vehicles sold in California. Heavy-duty vehicles have been regulated since 1973 (see California Administrative Code, Title 13, Chapter 3, Section 2022).

Through 1977, the evaporative emission standard was 2 gm/test as determined by the carbon trap test procedure. In 1978, however, the standard and the test procedure was altered. (See California Administrative Code, Title 13, Chapter 3, Sections 1970 and 1976.) A more stringent test was developed called "Sealed Housing Evaporative Determination" (SHED). The new standard is 6 gm/test as determined by the more stringent SHED test procedure. Both test procedures are described in the Code of Federal Regulations. (40 CFR 85.074-11 to 85.074-13 for carbon trap and 40 CFR 86.101 et seq for "SHED.")

Vehicle manufacturers are required to comply with several sets of complementary regulations to ensure that all vehicles sold in California comply with all applicable emissions regulations. These relate to certification, assembly-line testing, compliance testing, durability, and dealership surveillance.

The certification program, which applies to motorcycles, light-duty and medium-duty vehicles, and heavy-duty engines and vehicles, is intended to ensure that properly maintained vehicles are designed to comply with the applicable emission standards for their useful lives. Assembly-line test procedures are intended to ensure that California vehicles are properly equipped and meet the applicable standards when they leave the factory. At the present time, the assembly-line test procedures apply only to light-duty and medium-duty vehicles, excluding motorcycles. Compliance testing, which is performed at the ARB's Haagen-Smit Laboratory in El Monte, is designed to verify the manufacturers' assembly-line tests on passenger cars and light-duty and medium-duty trucks, and to monitor the emissions from new production motorcycles in the absence of a motorcycle assembly-line test program. Finally, the ARB's dealership surveillance program is intended to ensure that new light-duty and medium-duty vehicles are properly equipped and adjusted when delivered to customers in California. Additional information on test procedures is in Chapter 23.

## 2. Fuel Content Limitations

Lead and sulfur emissions are controlled by limiting their content in fuel. In both cases, refiners of gasoline sold in California have gradually been required to reduce the content of these compounds in their product (see California Administrative Code, Title 13, Chapter 3, Section 2253). Phase-down requirements for lead for refiners producing more than 20,000 bbl/day of gasoline are:

<u>Effective Date</u>	<u>Maximum Lead Content of Motor Vehicle Gasoline (Pool Average*)</u>
Pre-1976	1.85 gm/gal
January 1977	1.40 gm/gal
January 1978	1.00 gm/gal
January 1979	0.70 gm/gal
January 1980	0.40 gm/gal

\*The pool average is the average of motor vehicle gasoline produced by a refiner.

The phase-down requirements for refiners producing less than 20,000 bbl/day are:

<u>Effective Date</u>	<u>Maximum Lead Content of Motor Vehicle Gasoline (Pool Average*)</u>
January 1, 1979	1.7 gm/gal
January 1, 1980	1.4 gm/gal

Since motor vehicles are almost entirely responsible for ambient lead standard violations, this phase-down, aided by the inability of catalyst equipped vehicles to use leaded gasoline, is the essence of California's strategy to achieve the national ambient air quality standard for lead.

## 3. Future Technical Controls

### a. Emissions Standards for New Vehicles

The exhaust emission standards have been established for 1980 and later model vehicles, and are shown in Tables 4-4 and 4-5.

Table 4-4

1980 and Future California and Federal  
Exhaust Emission Standards for Passenger Cars,  
Light and Medium-Duty Vehicles  
grams per mile

Model Year	Vehicle Type*	Test Weight (lbs)	California**			HC	Federal	
			NMHC***	CO	NOx****		CO	NOx****
1980	PC	All	0.39(0.41)	9.0	1.0(1.5)	0.41	7.0	2.0
	LDT	0-3999	0.39(0.41)	9.0	1.5+	1.7	18	2.3
	LDT	4000-5999	0.50(0.50)	9.0	2.0	1.7	18	2.3
	MDV	All	0.90(0.9)	17	2.3	1.7	18	2.3
1981	PC	All	0.39(0.41)	3.4	1.0(1.5)	0.41	3.4	1.0
	LDT,MDV	0-3999	0.39(0.41)	9.0	1.0(1.5)	1.7	18	2.3
	LDT,MDV	4000-5999	0.50(0.50)	9.0	1.5(2.0)	1.7	18	2.3
	MDV	6000&larger	0.60(0.60)	9.0	2.0(2.3)	1.7	18	2.3
1982	PC	All	0.39(0.41)	7.0	0.4(1.0)	0.41	3.4	1.0
	LDT,MDV	0-3999	0.39(0.41)	9.0	1.0(1.5)	1.7	18	2.3
	LDT,MDV	4000-5999	0.50(0.50)	9.0	1.5(2.0)	1.7	18	2.3
	MDV	6000&larger	0.60(0.60)	9.0	2.0(2.3)	1.7	18	2.3
1983 and later	PC	All	0.39(0.41)	7.0	0.4(1.0)	0.41	3.4	1.0
	LDT,MDV	0-3999	0.39(0.41)	9.0	0.4(1.0)	1.7	18	2.3
	LDT,MDV	4000-5999	0.50(0.50)	9.0	1.0(1.5)	1.7	18	2.3
	MDV	6000&larger	0.60(0.60)	9.0	1.5(2.0)	1.7	18	2.3

(See California Administrative Code, Title 13, Chapter 3, Sections 1960 and 1960.1.)

\*PC - passenger cars

LDT - light-duty trucks (0-6000 lbs. gross vehicle weight)

MDV - medium-duty vehicles (6001-8500 lbs. gross vehicle weight)

Federal regulations combine LDT's and MDV's into one, expanded LDT category.

\*\*A manufacturer may choose alternate standards for 1981 and 1982 of 0.39 gm/mi for non-methane hydrocarbons (or 0.41 for total HC); 7.0 gm/mi for CO; and 0.7 gm/mi for NOx.

\*\*\*Standards in parentheses refer to total hydrocarbons (HC) emissions. Compliance with the 1980 standard can be achieved by an alternate non-methane hydrocarbon standard of 0.39 gm/mi.

\*\*\*\*Standards in parentheses must be met by manufacturers choosing to certify their vehicles for 100,000 miles instead of the normal 50,000 mile distance.

+2.4 gm/mile for a 4 wheel drive vehicle.



Table 4-5

Future California Exhaust Emissions Standards  
for Heavy-Duty Vehicles  
grams per brake horsepower hour

Year		TOG	CO	NOx	TOG + NOx
1980-82*	(1)	1.0	25	-	6.0
	or (2)	-	25	-	5
1983 & Subsequent		0.5	25	-	4.5

(See California Administrative Code, Title 13, Chapter 3, Section 1956.6.)

\*The two sets of standards for each model-year are alternatives. A manufacturer shall have the option for each engine family of showing compliance with either set.

All 1980 and later model motorcycles, with engine displacements greater than 50 cc's, are scheduled to meet exhaust standards of 5.0 gm/km for TOG and 12 gm/km for CO under identical national and state standards. In 1982, the TOG standard is scheduled to drop to 1.0 gm/km in California only.

As discussed earlier, evaporative emissions from motor vehicles are also subject to control. All 1980 and later model motor vehicles (except motorcycles) must comply with a 2 gm/test standard as determined by the SHED test procedure. Motorcycles must comply with standards of 6 gm/test in 1983 and 2 gm/test in 1985 (also SHED).

b. Motor Vehicle Inspection Program

The most important follow-up concept for insuring the effectiveness of motor vehicle emission controls is the Motor Vehicle Inspection Program (MVIP). The periodic inspection of vehicles for emissions-related defects and malfunctions, and the repair of those vehicles which do not pass inspection, is a vital strategy in preserving the effectiveness of vehicle emission control systems.

California has begun a centralized Motor Vehicle Inspection Program on a change of vehicle ownership basis in the South Coast Air Basin (SCAB).

This program includes an idle emissions test for passenger cars, light-duty trucks, and medium-duty vehicles. Standards for the test are expected to cause 35% of the "worst polluting"\* vehicles to fail and require repair. Only organic gas and carbon monoxide emissions are measured. Devices which control NOx emissions are visually and/or functionally checked. A loaded mode test may be added in the future to test for all three pollutants.

The 1977 Clean Air Act Amendments require motor vehicle inspection programs in areas unable to demonstrate compliance with national ambient air quality standards for oxidant or CO by 1982. The nonattainment plans which need an extension of the attainment date to 1987 endorse an MVIP as part of their control strategy.

Implementation of MVIP will require action by the Legislature. The Legislature is currently considering adoption of Senate Bill 84 to provide local officials the option to request implementation of a MVIP by the state.

c. Control of Emissions From Fleet Vehicles

One of the eighteen control measures required to be considered by Section 108(f)(1)(A) is the conversion of fleet vehicles to alternative fuels (such as alcohol, methane, etc.) and engines or to otherwise control emissions from fleet vehicles. Technology is becoming available so that this measure may be implemented in a number of air basins in the future.

d. Control of Emissions From Other Vehicular Sources

There are a number of classes of vehicles and mobile equipment powered by the internal combustion engine that are not controlled, the contribution of these uncontrolled sources to total emissions will become proportionately greater. Off-road recreational vehicles, heavy construction equipment, utility equipment (such as lawn mowers) are possible candidates for control.

e. Other Than Light-Duty Vehicle Retrofit

Another control measure suggested in the CAA concerns the retrofit of heavy-duty vehicles with control devices. The ARB lacks statutory authority for these programs, and public acceptance of pre-

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\*Worst polluting relative to their designed emission levels.

vious retrofit programs indicate little likelihood of acceptance by the Legislature. Implementation of such programs requires several years lead time. However, some NAPs do contain this measure as part of their control strategy. The ARB has directed the staff to study the measure to determine its applicability as either an attainment or a maintenance measure and to determine what emissions reductions, if any, can properly be attributed to this tactic.

f. Other Measures

The ARB has directed the Executive Officer to determine which other future vehicle related emission control tactics contained in the NAPs should be accepted for inclusion in the SIP submission as either attainment or maintenance measures. This chapter will be amended to include a list of the future motor vehicle control tactics that will be pursued by the ARB as soon as possible.

SECTIONS IB AND IC

To Be Included In A Future Revision



## II. Non-vehicular (Stationary Source) Controls

### Introduction

In California, air pollution control districts (APCDs) have primary responsibility for control of air pollution from stationary sources. To accomplish this, the APCDs adopt and enforce rules and regulations for the area under their jurisdiction. The body of local regulations forms the core of the SIP control strategy for stationary sources in each air basin. Existing APCD rules and regulations have already been submitted to EPA as SIP revisions. Amendments to rules and regulations are submitted to EPA at the end of the quarter in which they are adopted by respective APCD Boards or by the ARB for APCDs. The ARB does not hold public hearings to revise the SIP to include rules and regulations if APCD adoption occurs following a hearing which complies with Clean Air Act and EPA requirements.

In recent years the State Air Resources Board (ARB) has taken a more active role in working with APCDs to ensure that all districts which need further pollutant control have adopted regulations which require the maximum degree of control that is technologically feasible and economically reasonable. In this regard, ARB develops model rules for specific source categories to assist local districts in the development, adoption, and implementation of control measures which will provide needed emission reductions. If further emission reductions are needed to attain and/or maintain standards, ARB requests that local districts adopt rules which are either consistent with the ARB model rules or at least as effective. ARB may adopt rules for a local district whenever a district needing further controls fails to take action in response to a model rule.

This section summarizes the existing rules and regulations in effect in California as of January 1, 1979. It also outlines ARB's effort to comply with the Clean Air Act, as amended in 1977, which requires adoption of all "reasonably available control measures" (RACMs) to the extent necessary for attainment and maintenance. Descriptions of ARB adopted or planned model rules are included along with a schedule for local district adoption of rules consistent with ARB model rules. The ARB will schedule public hearings to consider the adoption of rules for APCDs not adequately complying with this schedule. ARB model rules for RACMs are included in Appendix 4-B.

### A. Rules Presently in Effect

This section provides a general summary of the basic provisions of most of the rules and regulations in effect in the state in January 1979. Table 4-7 lists the number of each of the rules and regulations applicable to stationary sources in

Rule Numbers of Control Regulations  
in Effect as of January 1, 1979

## Great Basin Valleys Air Basin

		Great Basin Unified APCD
<u>PARTICULATE MATTER</u>		
1.	Visible Emissions	400
2.	Process Weight	404 A
3.	Grain Loading	404 A
4.	Fuel Burning Equipment	
5.	Fugitive Dust	401
6.	Combustion Contaminants	
7.	Incinerators	
8.	Power Generating Equip.	
8.1	Steam Generating Equip.	
9.	Abrasive Blasting	
9.1	Geothermal Well Drilling	
<u>BURNING</u>		
10.	Open Burning	406
11.	Orchard heaters	501
12.	Incinerators	407
* 13.	Reduction of Animal Matter	413
14.	Pathological Incineration	
15.	Agricultural Burning	408-410
16.	Mechanized Burners	
<u>ORGANIC COMPOUNDS</u>		
20.	Storage of Organic Liquids	905
21.	Gasoline Transfer, Phase I	
22.	Gasoline Transfer, Phase II	
23.	Organic Liquid Loading	420
24.	Oil-Effluent Water Separation	
25.	Specific Equipment	412
25.1	Asphalt Air Blowing	
26.	Organic Solvents	417
26.1	Architectural Coatings	
26.2	Dry Cleaning	
27.	Gasoline Specifications	
28.	Cargo Vessel Loading	
<u>SULFUR COMPOUNDS</u>		
30.	Sulfur Oxide Emissions	416
31.	Sulfur Recovery Plants	
32.	Sulfuric Acid Plants	
33.	Fuel Burning Equipment	
34.	Sulfur Content of Fuels	
* 35.	Sulfide Emissions	
* 35.1	Geothermal	
36.	Scavenger Plants	
<u>OTHER POLLUTANTS</u>		
40.	Oxides of Nitrogen Emissions	404 B, 416(2)
* 41.	Fluorine	
42.	Carbon Monoxide	
43.	Lead	
44.	Livestock Feed Yards	
<u>GENERAL PROVISIONS</u>		
50.	Definitions	101 A-V
51.	Nuisance	402
52.	Circumvention, Separation and Combination	
53.	Breakdown Provisions	403, 617
54.	Emergency Episodes	700
55.	Source Monitoring and Recordkeeping	206, 207
56.	Public Availability of Data	215
57.	Authority to Arrest	105
* 58.	NSPS	Regulation IX
* 59.	NESHAPS	Regulation X
<u>PERMIT SYSTEM</u>		
60.	Authority to Construct	200 A
61.	Permit to Operate	200 B
62.	New Source Review	216
<u>FEE SCHEDULES</u>		
70.	Permit Fees	300
71.	Emission Charges	

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TABLE 4-7

Rule Numbers of Control Regulations  
in Effect as of January 1, 1979

## Lake County Air Basin

	Lake County APCD
<u>PARTICULATE MATTER</u>	
1. Visible Emissions	400
2. Process Weight	411 B
3. Grain Loading	411 A
4. Fuel Burning Equipment	
5. Fugitive Dust	
6. Combustion Contaminants	410
7. Incinerators	
8. Power Generating Equip.	
8.1 Steam Generating Equip.	
9. Abrasive Blasting	
9.1 Geothermal Well Drilling	421.1
<u>BURNING</u>	
10. Open Burning	431
11. Orchard heaters	438
12. Incinerators	
* 13. Reduction of Animal Matter	437
14. Pathological Incineration	
15. Agricultural Burning	Chapter VIII
16. Mechanized Burners	
<u>ORGANIC COMPOUNDS</u>	
20. Storage of Organic Liquids	439
21. Gasoline Transfer, Phase I	
22. Gasoline Transfer, Phase II	
23. Organic Liquid Loading	
24. Oil-Effluent Water Separation	
25. Specific Equipment	
25.1 Asphalt Air Blowing	
26. Organic Solvents	
26.1 Architectural Coatings	
26.2 Dry Cleaning	
27. Gasoline Specifications	
28. Cargo Vessel Loading	
<u>SULFUR COMPOUNDS</u>	
30. Sulfur Oxide Emissions	
31. Sulfur Recovery Plants	412
32. Sulfuric Acid Plants	
33. Fuel Burning Equipment	
34. Sulfur Content of Fuels	
* 35. Sulfide Emissions	
* 35.1 Geothermal	421, 422
36. Scavenger Plants	
<u>OTHER POLLUTANTS</u>	
40. Oxides of Nitrogen Emissions	
* 41. Fluorine	
42. Carbon Monoxide	
43. Lead	
44. Livestock Feed Yards	
<u>GENERAL PROVISIONS</u>	
50. Definitions	Article II
51. Nuisance	430
52. Circumvention, Separation and Combination	520
53. Breakdown Provisions	500, 510, 511
54. Emergency Episodes	700
55. Source Monitoring and Recordkeeping	
56. Public Availability of Data	532, 533
57. Authority to Arrest	
* 58. NSPS	440
* 59. NESHAPS	450
<u>PERMIT SYSTEM</u>	
60. Authority to Construct	600
61. Permit to Operate	610
62. New Source Review	602, 607
<u>FEE SCHEDULES</u>	
70. Permit Fees	Table VI
71. Emission Charges	

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TABLE 4-7

Rule Numbers of Control Regulations  
in Effect as of January 1, 1979

## Lake Tahoe Air Basin

	Portion of El Dorado Co. APCD	Portion of Placer County APCD
<u>PARTICULATE MATTER</u>		
1. Visible Emissions	202	202
2. Process Weight	212	211
3. Grain Loading	207	207
4. Fuel Burning Equipment	209	209
5. Fugitive Dust		
6. Combustion Contaminants	207	210 B
7. Incinerators		
8. Power Generating Equip.		
8.1 Steam Generating Equip.		
9. Abrasive Blasting	215	214
9.1 Geothermal Well Drilling		
<u>BURNING</u>		
10. Open Burning	301	301
11. Orchard heaters	208	208
12. Incinerators	206 A	206 A
* 13. Reduction of Animal Matter	214	213
14. Pathological Incineration	206 B	206 B
15. Agricultural Burning	306-321	306-321
16. Mechanized Burners	322	322
<u>ORGANIC COMPOUNDS</u>		
20. Storage of Organic Liquids	213	212
21. Gasoline Transfer, Phase I		
22. Gasoline Transfer, Phase II		
23. Organic Liquid Loading		
24. Oil-Effluent Water Separation		
25. Specific Equipment		
25.1 Asphalt Air Blowing		
26. Organic Solvents		
26.1 Architectural Coatings		
26.2 Dry Cleaning		
27. Gasoline Specifications		
28. Cargo Vessel Loading		
<u>SULFUR COMPOUNDS</u>		
30. Sulfur Oxide Emissions	210	210 A
31. Sulfur Recovery Plants		
32. Sulfuric Acid Plants		
33. Fuel Burning Equipment	209	209
34. Sulfur Content of Fuels		
* 35. Sulfide Emissions		
* 35.1 Geothermal		
36. Scavenger Plants		
<u>OTHER POLLUTANTS</u>		
40. Oxides of Nitrogen Emissions	209	209
* 41. Fluorine		
42. Carbon Monoxide		
43. Lead		
44. Livestock Feed Yards		
<u>GENERAL PROVISIONS</u>		
50. Definitions	102 A-ZZ	102
51. Nuisance	205	205
52. Circumvention, Separation and Combination	405, 406, 407	405, 406, 407
53. Breakdown Provisions	404	404
54. Emergency Episodes		
55. Source Monitoring and Recordkeeping	408, 507	408, 507
56. Public Availability of Data	409	409
57. Authority to Arrest		802
* 58. NSPS		
* 59. NESHAPS		
<u>PERMIT SYSTEM</u>		
60. Authority to Construct	501 A	501 A
61. Permit to Operate	501 B	501 B
62. New Source Review	508	508
<u>FEE SCHEDULES</u>		
70. Permit Fees		601
71. Emission Charges		

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TABLE 4-7

Rule Numbers of Control Regulations in Effect as of January 1, 1979  
Mountain Counties Air Basin

	Amador County APCD	Calaveras County APCD	Portion of El Dorado Co. APCD	Mariposa County APCD	Nevada County APCD	Portion of Placer Co. APCD	Plumas County APCD	Sierra County APCD	Tuolumne County APCD
<b>PARTICULATE MATTER</b>									
1. Visible Emissions	202	202	202	202	202	202	202	202	202
2. Process Weight	212	212	212	212	212	211	212	202	202
3. Grain Loading	207	207	207	207	207	207	207	212	212
4. Fuel Burning Equipment	209	209	209	209	209	209	207	207	207
5. Fugitive Dust						209	209	209	209
6. Combustion Contaminants	207	207	207	207	207	210 B	207	207	207
7. Incinerators									
8. Power Generating Equip.									
8.1 Steam Generating Equip.									
9. Abrasive Blasting	215	215	215	215	216	214	215	215	215
9.1 Geothermal Well Drilling									
<b>BURNING</b>									
10. Open Burning	302	301	301	301	301	301	301	301	301
11. Orchard heaters	208	208	208	208	208	208	208	208	208
12. Incinerators	206	206 A	206 A	206 A	206 A	206 A	206 A	206 A	206 A
* 13. Reduction of Animal Matter	214	214	214	214	214	213	214	214	214
14. Pathological Incineration		206 B	206 B	206 B	206 B	206 B	206 B	206 B	206 B
15. Agricultural Burning	306-313	306-321	306-321	306-321	306-321	306-321	306-321	306-321	306-321
16. Mechanized Burners	312	322	322	322	322	322	322	322	322
<b>ORGANIC COMPOUNDS</b>									
20. Storage of Organic Liquids	213	213	213	213	213	212	213	213	213
21. Gasoline Transfer, Phase I									
22. Gasoline Transfer, Phase II									
23. Organic Liquid Loading	213.1								
24. Oil-Effluent Water Separation									
25. Specific Equipment									
25.1 Asphalt Air Blowing									
26. Organic Solvents	213.2, 213.3								
26.1 Architectural Coatings									
26.2 Dry Cleaning									
27. Gasoline Specifications									
28. Cargo Vessel Loading									
<b>SULFUR COMPOUNDS</b>									
30. Sulfur Oxide Emissions	210	210	210	210	210	210 A	210	210	210
31. Sulfur Recovery Plants									
32. Sulfuric Acid Plants									
33. Fuel Burning Equipment	209	209	209	209	209	209	209	209	209
34. Sulfur Content of Fuels									
* 35. Sulfide Emissions									
* 35.1 Geothermal									
36. Scavenger Plants									
<b>OTHER POLLUTANTS</b>									
40. Oxides of Nitrogen Emissions	209	209	209	209	209	209	209	209	209
* 41. Fluorine									
42. Carbon Monoxide									
43. Lead									
44. Livestock Feed Yards									
<b>GENERAL PROVISIONS</b>									
50. Definitions	102A-BD	102A-YY	102A-ZZ	102A-ZZ	102A-ZZ	102	102A-ZZ	102A-ZZ	102A-ZZ
51. Nuisance	203	205	205	205	206	205	205	205	205
52. Circumvention, Separation and Combination	405,406, 407	405,406 407	405,406, 407	405,406, 407	405,406 407	405,406, 407	406,406 407	405,406 407	405,406, 407
53. Breakdown Provisions	404	404	404	404	404	404	404	404	404
54. Emergency Episodes									
55. Source Monitoring and Recordkeeping	408	408,507	408,507	408,507	408,507	408,507	408,507	408,507	408,507
56. Public Availability of Data	409	409	409	409	409	409	409	409	409
57. Authority to Arrest					105	802			
58. NSPS									
59. NESHAPS									
<b>PERMIT SYSTEM</b>									
60. Authority to Construct	501 A	501	501 A	501 A	501 A	501 A	501 A	501 A	501 A
61. Permit to Operate	501 B	501 B	501 B	501 B	501 B	501 B	501 B	501 B	501 B
62. New Source Review	508	508	508	508	508	508	508	508	508
<b>FEE SCHEDULES</b>									
70. Permit Fees	602	601							
71. Emission Charges						601	601		601

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TABLE 4-7

Rule Numbers of Control Regulations  
in Effect as of January 1, 1979

North Central Coast Air Basin

	Monterey Bay Unified APCD
<u>PARTICULATE MATTER</u>	
1. Visible Emissions	400
2. Process Weight	403(b)
3. Grain Loading	403(a)
4. Fuel Burning Equipment	
5. Fugitive Dust	
6. Combustion Contaminants	
7. Incinerators	
8. Power Generating Equip.	
8.1 Steam Generating Equip.	
9. Abrasive Blasting	
9.1 Geothermal Well Drilling	
<u>BURNING</u>	
10. Open Burning	407
11. Orchard heaters	Regulation V
12. Incinerators	408
* 13. Reduction of Animal Matter	414
14. Pathological Incineration	
15. Agricultural Burning	409-411
16. Mechanized Burners	407(k)
<u>ORGANIC COMPOUNDS</u>	
20. Storage of Organic Liquids	417
21. Gasoline Transfer, Phase I	418
22. Gasoline Transfer, Phase II	
23. Organic Liquid Loading	419
24. Oil-Effluent Water Separation	420
25. Specific Equipment	
25.1 Asphalt Air Blowing	
26. Organic Solvents	416
26.1 Architectural Coatings	
26.2 Dry Cleaning	
27. Gasoline Specifications	
28. Cargo Vessel Loading	
<u>SULFUR COMPOUNDS</u>	
30. Sulfur Oxide Emissions	404(a)
31. Sulfur Recovery Plants	
32. Sulfuric Acid Plants	
33. Fuel Burning Equipment	
34. Sulfur Content of Fuels	412, 413
* 35. Sulfide Emissions	
* 35.1 Geothermal	
36. Scavenger Plants	
<u>OTHER POLLUTANTS</u>	
40. Oxides of Nitrogen Emissions	404(b), (c)
* 41. Fluorine	
42. Carbon Monoxide	
43. Lead	
44. Livestock Feed Yards	
<u>GENERAL PROVISIONS</u>	
50. Definitions	10(a)-(w)
51. Nuisance	402
52. Circumvention, Separation and Combination	415
53. Breakdown Provisions	216, 617
54. Emergency Episodes	Regulation VII
55. Source Monitoring and Recordkeeping	215
56. Public Availability of Data	214
57. Authority to Arrest	104
* 58. NSPS	423
* 59. NESHAPS	424
<u>PERMIT SYSTEM</u>	
60. Authority to Construct	200(a)
61. Permit to Operate	200(b)
62. New Source Review	208
<u>FEE SCHEDULES</u>	
70. Permit Fees	300
71. Emission Charges	

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TABLE 4-7

Rule Numbers of Control Regulations in Effect as of January 1, 1979  
North Coast Air Basin

	Del Norte County APCD	Humboldt County APCD	Mendocino County APCD	Northern Sonoma County APCD	Trinity County APCD
<u>PARTICULATE MATTER</u>					
1. Visible Emissions	410(a)	410(a)	410(b)	410(a)	410(a)
2. Process Weight	420(d)	420(d)	420(d)	420(d)	420(d)
3. Grain Loading	420(d)	420(d)	420(d)	420(d)	420(d)
4. Fuel Burning Equipment					
5. Fugitive Dust	430	430	430	430	430
6. Combustion Contaminants	420(a), (b)	420(a), (b)	420(a), (b)	420(a), (b)	420(a), (b)
7. Incinerators	420(e)	420(e)	420(e)	420(e)	420(e)
8. Power Generating Equip.					
8.1 Steam Generating Equip.		420(b)	420(b)	420(b)	420(b)
9. Abrasive Blasting					
9.1 Geothermal Well Drilling	420(f)	420(f)	420(f)	420(f)	420(f)
<u>BURNING</u>					
10. Open Burning	Reg. 2	Reg. 2	Reg. 2	Reg. 2	Reg. 2
11. Orchard heaters	Reg. 1-480	Reg. 1-480	Reg. 1-480	Reg. 1-480	Reg. 1-480
12. Incinerators	Reg. 1-470				
13. Reduction of Animal Matter		Reg. 1-470	Reg. 1-470	Reg. 1-470	Reg. 1-470
14. Pathological Incineration					
15. Agricultural Burning	Reg. 2	Reg. 2	Reg. 2	Reg. 2	Reg. 2
16. Mechanized Burners	Reg. 2, Exception 5	Reg. 2, Exception 5	Reg. 2, Exception 5	Reg. 2, Exception 5	Reg. 2, Excep- tion 5
<u>ORGANIC COMPOUNDS</u>					
20. Storage of Organic Liquids	482	482	482	482	482
21. Gasoline Transfer, Phase I					
22. Gasoline Transfer, Phase II					
23. Organic Liquid Loading					
24. Oil-Effluent Water Separation					
25. Specific Equipment					
25.1 Asphalt Air Blowing					
26. Organic Solvents					
26.1 Architectural Coatings	*				
26.2 Dry Cleaning					
27. Gasoline Specifications					
28. Cargo Vessel Loading					
<u>SULFUR COMPOUNDS</u>					
30. Sulfur Oxide Emissions	440	440	440	440	440
31. Sulfur Recovery Plants					
32. Sulfuric Acid Plants					
33. Fuel Burning Equipment					
34. Sulfur Content of Fuels					
35. Sulfide Emissions	450	450	450	450	450
35.1 Geothermal	455	455	455	455	455
36. Scavenger Plants					
<u>OTHER POLLUTANTS</u>					
40. Oxides of Nitrogen Emissions					
41. Fluorine					
42. Carbon Monoxide					
43. Lead					
44. Livestock Feed Yards					
<u>GENERAL PROVISIONS</u>					
50. Definitions	Reg. 1, Rule 130	130	130	130	130
51. Nuisance	400(a)	400(a)	400(a)	400(a)	400(a)
52. Circumvention, Separation and Combination	400(b)	400(b)	400(b)	400(b)	400(b)
53. Breakdown Provisions	540	540	540	540	540
54. Emergency Episodes	140	140	140	140	140
55. Source Monitoring and Recordkeeping	Appendix D	Appendix D	Appendix D	Appendix D	Appendix D
56. Public Availability of Data	150	150	150	150	150
57. Authority to Arrest					
58. NSPS	Reg. 3	Reg. 3	Reg. 3	Reg. 3	Reg. 3
59. NESHAPS	Reg. 4	Reg. 4	Reg. 4	Reg. 4	Reg. 4
<u>PERMIT SYSTEM</u>					
60. Authority to Construct	200(b)	200(b)	200(b)	200(b)	200(b)
61. Permit to Operate	240	240	240	240	240
62. New Source Review	220, 230	220, 230	220, 230	220, 230	220, 230
<u>FEE SCHEDULES</u>					
70. Permit Fees	300	300	300	300	300
71. Emission Charges					

\* Will furnish the APCDs with provisions of Model Rules adopted.

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TABLE 4-7

Rule Numbers of Control Regulations in Effect as of January 1, 1979  
Northeast Plateau Air Basin

	Lassen County APCD	Modoc County APCD	Portion of Shasta County APCD	Siskiyou County APCD
<u>PARTICULATE MATTER</u>				
1. Visible Emissions	4:0	3:0	3:1	4:1
2. Process Weight	4:11	3:12	3:2	4:6
3. Grain Loading	4:3	3:3	3:2	4:4
4. Fuel Burning Equipment				
5. Fugitive Dust				
6. Combustion Contaminants	4:4(b)	3:4(b)	3:2	4:5(b)
7. Incinerators				
8. Power Generating Equip.				
8.1 Steam Generating Equip.				
9. Abrasive Blasting				
9.1 Geothermal Well Drilling			3:1	
<u>BURNING</u>				
10. Open Burning	4:7	3:7	2:7	4:3
11. Orchard heaters	4:14	3:17		4:13
12. Incinerators				
* 13. Reduction of Animal Matter	4:17	3:4 A	3:12	4:12
14. Pathological Incineration				
15. Agricultural Burning	Appendix A	Regulation V	2:6	Appendix
16. Mechanized Burners			2:8 (1)(e)	
<u>ORGANIC COMPOUNDS</u>				
20. Storage of Organic Liquids	4:15	3:16	3:3	4:9
21. Gasoline Transfer, Phase I				
22. Gasoline Transfer, Phase II				
23. Organic Liquid Loading			3:3	
24. Oil-Effluent Water Separation				
25. Specific Equipment				
25.1 Asphalt Air Blowing				
26. Organic Solvents			3:4	
26.1 Architectural Coatings				
26.2 Dry Cleaning				
27. Gasoline Specifications				
28. Cargo Vessel Loading				
<u>SULFUR COMPOUNDS</u>				
30. Sulfur Oxide Emissions	4:4(a)	3:4(a)	3:2	4:5 A
31. Sulfur Recovery Plants				
32. Sulfuric Acid Plants				
33. Fuel Burning Equipment				
34. Sulfur Content of Fuels	4:10	3:10		
* 35. Sulfide Emissions			3:2	4:50
* 35.1 Geothermal				
36. Scavenger Plants				
<u>OTHER POLLUTANTS</u>				
40. Oxides of Nitrogen Emissions				
* 41. Fluorine				4:5 E
42. Carbon Monoxide				4:5 C
43. Lead				
44. Livestock Feed Yards				
<u>GENERAL PROVISIONS</u>				
50. Definitions	1:2 (a) - (w)	1:2 (a) - (y)	1:2	1:2 (A) - (b)
51. Nuisance	4:2	3:2	3:1	4:2
52. Circumvention, Separation and Combination	4:12, 4:13, and 4:16	3:4 B, 3:13, and 3:14	3:6	4:7, 4:10 and 4:11
53. Breakdown Provisions		3:12	3:10	
54. Emergency Episodes				
55. Source Monitoring and Recordkeeping				4:8
56. Public Availability of Data	1:3	1:3, 2:14	2:25	1:3, 2:13
57. Authority to Arrest				
* 58. NSPS			3:13-3:33	
* 59. NESHAPS			3:34-3:38	
<u>PERMIT SYSTEM</u>				
60. Authority to Construct	2:0(a)	2:0(a)	2:2(a)	2:1 A
61. Permit to Operate	2:0(b)	2:0(b)	2:3(a)	2:1 B
62. New Source Review			2:2(c)	
<u>FEE SCHEDULES</u>				
70. Permit Fees	3:2		2:11	3:2
71. Emission Charges				

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TABLE 4-7

Rule Numbers of Control Regulations in Effect as of January 1, 1979  
Sacramento Valley Air Basin

	Butte County APCD	Colusa County APCD	Glenn County APCD	Sacramento County APCD	Portion of Shasta Co. APCD	Sutter County APCD	Tehama County APCD	Yolo- Solano Co. APCD	Yuba County APCD
<b>PARTICULATE MATTER</b>									
1. Visible Emissions	2-2	4.3	76	7	3:1	2.3	4.1	2.3	2
2. Process Weight	2-4	4.11	86	21	3:2	2.11	4.8	2.19	2.19
3. Grain Loading	2-5	4.10	85	23	3:2	2.10	4.3	2.11	2.18
4. Fuel Burning Equipment						2.15(c)	4.13(3)	2.16	
5. Fugitive Dust				9	3:2				
6. Combustion Contaminants	2-5	4.12(b)	85	24(a)(2)		2.10,2.12(b)	4.9(b)	2.12(b)	2.18
7. Incinerators									
8. Power Generating Equip.									
8.1 Steam Generating Equip.									
9. Abrasive Blasting									
9.1 Geothermal Well Drilling					3:1				
<b>BURNING</b>									
10. Open Burning	2-8	4.8	80	22(a)	2:7	2.8	4.6	2.8(a),2.9	2.4
11. Orchard heaters	3-1	4.13	20	27		5.1	4.2	2.20	2.17
12. Incinerators		4.9	91	22(b)		2.9	4.7	2.10	
* 13. Reduction of Animal Matter		4.15	87	26	3:12	2.14	4.5		2.23
14. Pathological Incineration									
15. Agricultural Burning	Chapter 3	6.3,6.1,*	Art. II	Reg. VII	2:6	Reg. IV	Reg. III	Reg. VI	Appendix
16. Mechanized Burners					2:8(1)(e)				
<b>ORGANIC COMPOUNDS</b>									
20. Storage of Organic Liquids	2-12	4.16	83	11	3:3	2.16	4.12	2.21	2.13-2.16
21. Gasoline Transfer, Phase I				13				2.21	
22. Gasoline Transfer, Phase II				14				2.22	
23. Organic Liquid Loading				12	3:3			2.21	
24. Oil-Effluent Water Separation									
25. Specific Equipment									
25.1 Asphalt Air Blowing									
26. Organic Solvents				25	3:4	2.13		2.13,2.15	2.25
26.1 Architectural Coatings				25(e)				2.14	
26.2 Dry Cleaning				25(g)					
27. Gasoline Specifications									
28. Cargo Vessel Loading									
<b>SULFUR COMPOUNDS</b>									
30. Sulfur Oxide Emissions	2-14	4.12(a)	89	24(a)(1)	3:2	2.12(a)	4.9(a)	2.12(a)	2.24
31. Sulfur Recovery Plants									
32. Sulfuric Acid Plants									
33. Fuel Burning Equipment						2.15(a)	4.13(a)	2.16(a)(1)	
34. Sulfur Content of Fuels				15			4.10		
* 35. Sulfide Emissions	2-13		90		3:2				
* 35.1 Geothermal									
36. Scavenger Plants									
<b>OTHER POLLUTANTS</b>									
40. Oxides of Nitrogen Emissions,						2.15(b)	4.14,4.13(b)	2.16(a)(2)	
* 41. Fluorine									
42. Carbon Monoxide									
43. Lead									
44. Livestock Feed Yards									
<b>GENERAL PROVISIONS</b>									
50. Definitions	1-1 thru 1-35	1.2(a)-(w)	2(a)-(gg)	2(a)-(n)	1:2	1.2(a)-(z)	1.2(a)-(xx)	1.2(a)-(ae)	1.1(a)-(gg)
51. Nuisance	2-1	4.5	78	8	3:1	2.5	4.4	2.5	2.9
52. Circumvention, Separation and Combination	2-15,2-16 2-17	4.17-4.19	93, 94	29	3:6	2.17-2.19	4.11-4.16	2.17	2.20,2.21, & 2.22
53. Breakdown Provisions			95.2,95.3		3:10		4.17		4.5,4.6
54. Emergency Episodes				Reg. IX		/		Reg. VII	
55. Source Monitoring and Recordkeeping									
56. Public Availability of Data		1.3	95.1	111	2:25	1.3	4.18	1.3	
57. Authority to Arrest				46		1.7		1.7	2.12
* 58. NSPS				112	3:13-3:33			8.1(a)	
* 59. NESHAPS				113	3:34-3:38			8.1(b)	
<b>PERMIT SYSTEM</b>									
60. Authority to Construct	4-2	2.5	Art. III	50(a)	2:2(a)	3.1(b)	2.2(a)	3.1(a),(b)	3.1(a)
61. Permit to Operate	4-2	2.5	50	50(b)	2:3(a)	3.1(c)	2.2(b)	3.1(c)	3.1(b)
62. New Source Review			50.1	56	2:2(c)			3.13	
<b>FEE SCHEDULES</b>									
70. Permit Fees	4-3,4-11		Art. IV	70	2:11				
71. Emission Charges			154,155					4.2	

\*Amendment 3.

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TABLE 4-7

Rule Numbers of Control Regulations  
in Effect as of January 1, 1979

## San Diego Air Basin

	San Diego County APCD
<u>PARTICULATE MATTER</u>	
1. Visible Emissions	50
2. Process Weight	54
3. Grain Loading	52
4. Fuel Burning Equipment	
5. Fugitive Dust	
6. Combustion Contaminants	53(b)
7. Incinerators	53(c)
8. Power Generating Equip.	
8.1 Steam Generating Equip.	
9. Abrasive Blasting	71
9.1 Geothermal Well Drilling	
<u>BURNING</u>	
10. Open Burning	102, 103
11. Orchard heaters	70
12. Incinerators	58
* 13. Reduction of Animal Matter	64
14. Pathological Incineration	
15. Agricultural Burning	105, 106, 109, 112
16. Mechanized Burners	
<u>ORGANIC COMPOUNDS</u>	
20. Storage of Organic Liquids	61.1
21. Gasoline Transfer, Phase I	61.3
22. Gasoline Transfer, Phase II	61.4
23. Organic Liquid Loading	61.2
24. Oil-Effluent Water Separation	65
25. Specific Equipment	
25.1 Asphalt Air Blowing	
26. Organic Solvents	66
26.1 Architectural Coatings	67.0, 67.1
26.2 Dry Cleaning	
27. Gasoline Specifications	
28. Cargo Vessel Loading	
<u>SULFUR COMPOUNDS</u>	
30. Sulfur Oxide Emissions	53(a)
31. Sulfur Recovery Plants	
32. Sulfuric Acid Plants	
33. Fuel Burning Equipment	
34. Sulfur Content of Fuels	62
* 35. Sulfide Emissions	
* 35.1 Geothermal	
36. Scavenger Plants	53.1
<u>OTHER POLLUTANTS</u>	
40. Oxides of Nitrogen Emissions	68
* 41. Fluorine	53(d)
42. Carbon Monoxide	
43. Lead	
44. Livestock Feed Yards	
<u>GENERAL PROVISIONS</u>	
50. Definitions	2(a)-(w)
51. Nuisance	51
52. Circumvention, Separation and Combination	60
53. Breakdown Provisions	98
54. Emergency Episodes	126-138
55. Source Monitoring and Recordkeeping	
56. Public Availability of Data	175-177
57. Authority to Arrest	5
* 58. NSPS	Regulation X
* 59. NESHAPS	Regulation XI
<u>PERMIT SYSTEM</u>	
60. Authority to Construct	10(a)
61. Permit to Operate	10(b)
62. New Source Review	20.1 - 20.4
<u>FEE SCHEDULES</u>	
70. Permit Fees	40
71. Emission Charges	

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Rule Numbers of Control Regulations  
in Effect as of January 1, 1979

San Francisco Bay Area Air Basin

	Bay Area AQMD
<u>PARTICULATE MATTER</u>	
1. Visible Emissions	3110
2. Process Weight	6112.2
3. Grain Loading	6112.1
4. Fuel Burning Equipment	
5. Fugitive Dust	
6. Combustion Contaminants	5112
7. Incinerators	4112.1, 4112.2
8. Power Generating Equip.	
8.1 Steam Generating Equip.	
9. Abrasive Blasting	
9.1 Geothermal Well Drilling	
<u>BURNING</u>	
10. Open Burning	2000
11. Orchard heaters	
12. Incinerators	Sec. 4113, Reg. 2
* 13. Reduction of Animal Matter	Division 17, Reg. 2
14. Pathological Incineration	
15. Agricultural Burning	3100, 3119, 3120
16. Mechanized Burners	
<u>ORGANIC COMPOUNDS</u>	
20. Storage of Organic Liquids	3102.1
21. Gasoline Transfer, Phase I	Reg. 2, Div. 13, 1302
22. Gasoline Transfer, Phase II	Reg. 2, Div. 13, 1302
23. Organic Liquid Loading	3102.2
24. Oil-Effluent Water Separation	3102.6
25. Specific Equipment	
25.1 Asphalt Air Blowing	Reg. 2, Div. 13
26. Organic Solvents	3101
26.1 Architectural Coatings	Reg. 9
26.2 Dry Cleaning	
27. Gasoline Specifications	
28. Cargo Vessel Loading	
<u>SULFUR COMPOUNDS</u>	
30. Sulfur Oxide Emissions	3121-3123
31. Sulfur Recovery Plants	3131.1
32. Sulfuric Acid Plants	3131
33. Fuel Burning Equipment	
34. Sulfur Content of Fuels	Division 16
* 35. Sulfide Emissions	Reg. 2, Div. 15; Reg. 2, 11101
* 35.1 Geothermal	
36. Scavenger Plants	
<u>OTHER POLLUTANTS</u>	
40. Oxides of Nitrogen Emissions	14111, et. seq.
* 41. Fluorine	
42. Carbon Monoxide	
43. Lead	Reg. 2, Div. 12
44. Livestock Feed Yards	
<u>GENERAL PROVISIONS</u>	
50. Definitions	
51. Nuisance	Reg. 2, 5111.2, 6111.2
52. Circumvention, Separation and Combination	Reg. 2, 3213, 3214
53. Breakdown Provisions	Reg. 2, 3212, et. seq.
54. Emergency Episodes	Regulation 5
55. Source Monitoring and Recordkeeping	3210.1 - 3210.3
56. Public Availability of Data	
57. Authority to Arrest	Regulation 6
* 58. NSPS	Regulation 7
* 59. NESHAPS	Regulation 8
<u>PERMIT SYSTEM</u>	
60. Authority to Construct	1301
61. Permit to Operate	1302
62. New Source Review	1306, 1309
<u>FEE SCHEDULES</u>	
70. Permit Fees	1317
71. Emission Charges	

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TABLE 4-7

Rule Numbers of Control Regulations in Effect as of January 1, 1979  
San Joaquin Valley Air Basin

	Fresno County APCD	Kern County APCD	Kings County APCD	Madera County APCD	Merced County APCD	San Joaquin Co. APCD	Stanislaus County APCD	Tulare County APCD
<b>PARTICULATE MATTER</b>								
1. Visible Emissions	401	401	401	401	401	401	401	401
2. Process Weight	405	405	405, 406	405, 406	405, 406	405, 406	405, 406	405
3. Grain Loading	404	404, 401.1	404	404	404	404	404	404
4. Fuel Burning Equipment	408(a)	408	408	408	408	408	408	408
5. Fugitive Dust								
6. Combustion Contaminants	408(b)	407.2	407.2	407.2	408.2	407.2	407.2	407.2
7. Incinerators	407(a)	407.1	407.1	407.1	407.1	407.1	407.1	407.1
8. Power Generating Equip.								
8.1 Steam Generating Equip.								
9. Abrasive Blasting								
9.1 Geothermal Well Drilling								
<b>BURNING</b>								
10. Open Burning	415	416	416	416	415	415	415	416
11. Orchard heaters	420	421	421	421	420	420	420	421
12. Incinerators	417	418	418	418	417	417	417	418
* 13. Reduction of Animal Matter	414	415	215	415	414	414	414	415
14. Pathological Incineration								
15. Agricultural Burning	416.1	417.1	416.1, 417.1,*	417.1	416.1, 421	416.1, 420.1	416.1	417.1
16. Mechanized Burners								
<b>ORGANIC COMPOUNDS</b>								
20. Storage of Organic Liquids	410	411	411	411	410	410	410	411
21. Gasoline Transfer, Phase I	411	412	412.1	412.1	411	411.1	411	412
22. Gasoline Transfer, Phase II	411.1	412.1	412.2		411.1	411.2	411.1	412.1
23. Organic Liquid Loading	412	413	413	413	412	412	412	413
24. Oil-Effluent Water Separation	413	414	414	414	413	413	413	414
25. Specific Equipment								
25.1 Asphalt Air Blowing								
26. Organic Solvents	409	410	410	410	409	409	409	410
26.1 Architectural Coatings	409.1	410.1	405.3	410.1	409.1	409.1	409.1	410.1
26.2 Dry Cleaning								
27. Gasoline Specifications								
28. Cargo Vessel Loading								
<b>SULFUR COMPOUNDS</b>								
30. Sulfur Oxide Emissions	406	407	407	407	407	407	407	407
31. Sulfur Recovery Plants								
32. Sulfuric Acid Plants								
33. Fuel Burning Equipment	408(a)	408, 409	409	408	408	408	408	408
34. Sulfur Content of Fuels								
* 35. Sulfide Emissions								
* 35.1 Geothermal								
36. Scavenger Plants				407.3		407.3		407.3
<b>OTHER POLLUTANTS</b>								
* 40. Oxides of Nitrogen Emissions	408(a)	408	409, 408	408, 409	408, 408.1	408, 408.1	408	408, 409
* 41. Fluorine								
42. Carbon Monoxide								
43. Lead								
44. Livestock Feed Yards								
<b>GENERAL PROVISIONS</b>								
50. Definitions	102(a)-(dd)	102(a)-(ee)	102	102	102	102	102	102
51. Nuisance	418	419	419	419	418	418	418	419
52. Circumvention, Separation and Combination	112, 113	112, 113	112, 405.2, 405.1	112, 113	110, 111	111, 421	111, 421	112, 113
53. Breakdown Provisions	110	111, 519	111	111	109	110	110	111
54. Emergency Episodes	Reg. VI	Reg. VI	Reg. VI	Reg. VI	Reg. VI	Reg. VI	Reg. VI	Reg. VI
55. Source Monitoring and Recordkeeping	108	108	108	108	108	108	108	108
56. Public Availability of Data	103, 103.1	103, 103.1	103, 103.1	103	103, 103.1	103, 103.1	103, 103.1	103, 103.1
57. Authority to Arrest	111	110	110	110	113	112	112	110
* 58. NSPS	423	422	422		422	422	422	422
* 59. NESHAPS	422	423	423		423	423	423	423
<b>PERMIT SYSTEM</b>								
60. Authority to Construct	201(a)	201(a)	201(a)	201(a)	201(a)	201(a)	201(a)	201(a)
61. Permit to Operate	201(b)	201(b)	201(b)	201(b)	201(b)	201(b)	201(b)	201(b)
62. New Source Review	210	210.1, 210.2	210.1	210, 210.1	210.1	209.1, 209.2	209.1	210.1
<b>FEE SCHEDULES</b>								
70. Permit Fees	301	301		301	301	301	301	301
71. Emission Charges								

\*419.1

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TABLE 4-7

Rule Numbers of Control Regulations in Effect as of January 1, 1979  
South Central Coast Air Basin

	San Luis Obispo County APCD	Santa Barbara County APCD	Ventura County APCD
<u>PARTICULATE MATTER</u>			
1. Visible Emissions	401 A	302	50
2. Process Weight	403 B		53
3. Grain Loading	403 A	306, 307	52
4. Fuel Burning Equipment	403 C.2.	304, 305	60
5. Fugitive Dust		309 E	
6. Combustion Contaminants			
7. Incinerators	403 C.1.	309 A	57 B
8. Power Generating Equip.		309 D	57 A
8.1 Steam Generating Equip.			
9. Abrasive Blasting			
9.1 Geothermal Well Drilling			74.1
<u>BURNING</u>			
10. Open Burning			
11. Orchard heaters	501 A	312	56
12. Incinerators	409		Regulation V
* 13. Reduction of Animal Matter	501 B	308	
14. Pathological Incineration	410	314	58
15. Agricultural Burning			
16. Mechanized Burners	502	401, 403	56
<u>ORGANIC COMPOUNDS</u>			
20. Storage of Organic Liquids	407 A	325	55
21. Gasoline Transfer, Phase I	407 B, 407 C	325 D	70
22. Gasoline Transfer, Phase II		325 H	70
23. Organic Liquid Loading	407 C	325 I	63
24. Oil-Effluent Water Separation	407 G	326	61
25. Specific Equipment		318	57
25.1 Asphalt Air Blowing		319	59
26. Organic Solvents		317	66
26.1 Architectural Coatings	407 H		66 B
26.2 Dry Cleaning	407 H5	323	66 D
27. Gasoline Specifications	407 H2	320	65
28. Cargo Vessel Loading	408	315	
<u>SULFUR COMPOUNDS</u>			
30. Sulfur Oxide Emissions		327	
31. Sulfur Recovery Plants	404 A	309 A	54
32. Sulfuric Acid Plants	404 B	309 B	
33. Fuel Burning Equipment	404 C	309 C	
34. Sulfur Content of Fuels	404 D	309 E	60 A
* 35. Sulfide Emissions	404 E	311	64
* 35.1 Geothermal		310	54 C, 54 D
36. Scavenger Plants			
<u>OTHER POLLUTANTS</u>			
40. Oxides of Nitrogen Emissions			
* 41. Fluorine	405 A	309 E	59, 60
42. Carbon Monoxide			
43. Lead	406	309 G	68
44. Livestock Feed Yards			
<u>GENERAL PROVISIONS</u>			
50. Definitions	105	102	2
51. Nuisance	402	303	51
52. Circumvention, Separation and Combination		301	33, 34, 36
53. Breakdown Provisions			
54. Emergency Episodes	107	505, 506	32
55. Source Monitoring and Recordkeeping	113	Regulation VI 328	Regulation VIII 37, 105
56. Public Availability of Data			
57. Authority to Arrest	112		
* 58. NSPS	111		200-204
* 59. NESHAPS			104
<u>PERMIT SYSTEM</u>			
60. Authority to Construct		Regulation IX	72, et. seq.
61. Permit to Operate	201 A	Regulation X	73, et. seq.
62. New Source Review	201 B, 201 C	201 A	10 A
<u>FEE SCHEDULES</u>			
70. Permit Fees	204	201 B	10 B
71. Emission Charges	303	205 C	26
		210	40

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TABLE 4-7

Rule Numbers of Control Regulations  
in Effect as of January 1, 1979

## South Coast Air Basin

	South Coast AQMD
<u>PARTICULATE MATTER</u>	
1. Visible Emissions	401
2. Process Weight	405
3. Grain Loading	404
4. Fuel Burning Equipment	
5. Fugitive Dust	403
6. Combustion Contaminants	409
7. Incinerators	473(b)
8. Power Generating Equip.	475
8.1 Steam Generating Equip.	476
9. Abrasive Blasting	
9.1 Geothermal Well Drilling	
<u>BURNING</u>	
10. Open Burning	444
11. Orchard heaters	
12. Incinerators	473(a)
* 13. Reduction of Animal Matter	472
14. Pathological Incineration	
15. Agricultural Burning	444
16. Mechanized Burners	
<u>ORGANIC COMPOUNDS</u>	
20. Storage of Organic Liquids	463
21. Gasoline Transfer, Phase I	461(a)
22. Gasoline Transfer, Phase II	461(b)
23. Organic Liquid Loading	462
24. Oil-Effluent Water Separation	464
25. Specific Equipment	465, 466, 467
25.1 Asphalt Air Blowing	470, 471
26. Organic Solvents	442, 443
26.1 Architectural Coatings	1113
26.2 Dry Cleaning	1102
27. Gasoline Specifications	432
28. Cargo Vessel Loading	
<u>SULFUR COMPOUNDS</u>	
30. Sulfur Oxide Emissions	53*, 53**, 53***, 53A****
31. Sulfur Recovery Plants	468
32. Sulfuric Acid Plants	469
33. Fuel Burning Equipment	
34. Sulfur Content of Fuels	431.1, 431.2, 431.3
* 35. Sulfide Emissions	
* 35.1 Geothermal	
36. Scavenger Plants	
<u>OTHER POLLUTANTS</u>	
40. Oxides of Nitrogen Emissions	474, 475, 476
* 41. Fluorine	
42. Carbon Monoxide	407
43. Lead	
44. Livestock Feed Yards	
<u>GENERAL PROVISIONS</u>	
50. Definitions	102, 103
51. Nuisance	402
52. Circumvention, Separation and Combination	408
53. Breakdown Provisions	430, 517
54. Emergency Episodes	Regulation VII
55. Source Monitoring and Recordkeeping	218
56. Public Availability of Data	
57. Authority to Arrest	105
* 58. NSPS	Regulation IX
* 59. NESHAPS	Regulation X
<u>PERMIT SYSTEM</u>	
60. Authority to Construct	201
61. Permit to Operate	202, 203
62. New Source Review	213, 213.1, 213.2
<u>FEE SCHEDULES</u>	
70. Permit Fees	301
71. Emission Charges	301(d)

\*Riverside; \*\*Los Angeles; \*\*\*Orange; \*\*\*\*San Bernardino

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TABLE 4-7

Rule Numbers of Control Regulations in Effect as of January 1, 1979  
 Southeast Desert Air Basin

	Imperial County APCD	Kern County APCD	Los Angeles County APCD	Riverside County APCD	San Bernardino County APCD
<b>PARTICULATE MATTER</b>					
1. Visible Emissions	401	401	401	401	401
2. Process Weight	404	405	405	405	405
3. Grain Loading	403	404, 404.1	404	404	404
4. Fuel Burning Equipment		408			
5. Fugitive Dust			403	403	403
6. Combustion Contaminants		407.2	409, 475, 476	409	409, 475, 476
7. Incinerators	406	407.1	473(b)	473(b)	473(b)
8. Power Generating Equip.			475, 476	475	475
8.1 Steam Generating Equip.				476	476
9. Abrasive Blasting					
9.1 Geothermal Well Drilling					
<b>BURNING</b>					
10. Open Burning	421	416	444	444	444
11. Orchard heaters	408	421			
12. Incinerators	409	418	473(a)	473(a)	473(a)
13. Reduction of Animal Matter	419	415	472	472	472
14. Pathological Incineration					
15. Agricultural Burning	Reg. VII	417.1	444	444	444
16. Mechanized Burners					
<b>ORGANIC COMPOUNDS</b>					
20. Storage of Organic Liquids	413	411	463	463	461, 463
21. Gasoline Transfer, Phase I	415	412	461(a)	461(a)	
22. Gasoline Transfer, Phase II		412.1	461(b)	461(b)	
23. Organic Liquid Loading		413.	462	462	462
24. Oil-Effluent Water Separation	414	414	464	464	464
25. Specific Equipment			465, 466, 467, 471	465, 466, 467	465, 466, 467, 471
25.1 Asphalt Air Blowing			470	470, 471	470
26. Organic Solvents	417	410	442, 443	442, 443	442, 443
26.1 Architectural Coatings		410.1		1113	
26.2 Dry Cleaning				1102	
27. Gasoline Specifications	416		432	432	432
28. Cargo Vessel Loading					
<b>SULFUR COMPOUNDS</b>					
30. Sulfur Oxide Emissions	405	407	53	53*, 53**, 53***, 53A****	406(a)
31. Sulfur Recovery Plants	411		468	468	468
32. Sulfuric Acid Plants	412		469	469	469
33. Fuel Burning Equipment		408, 409			
34. Sulfur Content of Fuels			431	431.1, 431.2, 431.3	431
* 35. Sulfide Emissions					
* 35.1 Geothermal					
36. Scavenger Plants					
<b>OTHER POLLUTANTS</b>					
40. Oxides of Nitrogen Emissions		408	474-476	474, 475, 476	474-476
* 41. Fluorine					406(b)
42. Carbon Monoxide			407	407	407
43. Lead					
44. Livestock Feed Yards	420				
<b>GENERAL PROVISIONS</b>					
50. Definitions	101 A-Y	102 (a-ee)	102, 103	102, 103	102, 103
51. Nuisance	407	419	402	402	402
52. Circumvention, Separation and Combination	113	112, 113	408	408	408
53. Breakdown Provisions	111, 112	111, 519	430	430, 517	430
54. Emergency Episodes	Reg. VI	Reg. VI	Reg. VII	Reg. VII	Reg. VII
55. Source Monitoring and Recordkeeping	110	108	218	218	218
56. Public Availability of Data	102, 103	103, 103.1			
57. Authority to Arrest		110	105	105	105
* 58. NSPS		422	Reg. IX	Reg. IX	Reg. IX
* 59. NESHAPS		423	Reg. X	Reg. X	Reg. X
<b>PERMIT SYSTEM</b>					
60. Authority to Construct	201 A	201(a)	201	201	201
61. Permit to Operate	201 B	201(b)	202, 203	202, 203	202, 203
62. New Source Review	207, 208	210.1, 210.2	213, 213.1, 213.2	213, 213.1, 213.2	213, 213.1, 213.2
<b>FEE SCHEDULES</b>					
70. Permit Fees	301	301	301	301	301
71. Emission Charges				301(d)	

\*Riverside, \*\*Los Angeles, \*\*\*Orange, \*\*\*\*San Bernardino.

\* Have not been and will not be submitted to the EPA as revisions to the SIP either because they do not pertain to the attainment or maintenance of NAAQS or because the board has disapproved the rules for technical or other reasons.

each district in each air basin. Some rules and regulations presented in the table have not been, or will not be, submitted to the EPA as revisions to the SIP either because they do not pertain to the attainment or maintenance of NAAQS or because the ARB has disapproved the rules for technical or other reasons.

Local rules and regulations are frequently revised. For this reason, the names by which the rules have been identified in this chapter may be different from the name used by the district. Generic names have been used here for easy comparison of the various districts' rules. The current version of an APCD's rules and regulations must be consulted to determine their specific requirements.\*

As expected, the body of rules differs markedly from basin to basin depending on the complexity of the air quality problem. Rural APCDs tend to have fewer and less stringent rules while major urban districts have all or most of the rules listed in this chapter.

### Particulate Matter

#### 1. Visible Emissions

State law limits the opacity of most visible air contaminants of darker than "Ringelmann 2" (equivalent opacity of 40%) to no more than three minutes in any one hour. Various exceptions are provided for under state law (e.g., fires set by public officers for fire fighting and agricultural burning). Most urban APCDs have adopted more stringent requirement for visible emissions not to exceed Ringelmann 1, or an equivalent opacity of 20%.

#### 2. Process Weight

These rules restrict the emission rate of particulate matter based on the total weight of all materials introduced into any specific process in any one hour. A table or formula is provided to determine allowable emissions. For example, some districts' tables range from a limit of emissions of 0.24 pounds per hour if the weight of materials into the processes is 50 pounds or less per hour to a limit of 40 pounds per hour for sources processing 60,000 pounds or more per hour. Solid fuel charges are usually considered as part of the process weight, but liquid and gaseous fuels and combustion air are not.

\*The Air Resources Board does not disseminate copies of APCD rules and regulations although a copy is retained for public inspection. Because of the frequent changes made, however, some copies may not be current. Copies of current rules can be obtained directly from the APCDs. (A list of APCDs and their addresses is contained in Appendix A.)

3. Grain Loading

These rules limit the discharge of particulate matter from any source to a concentration in the exhaust volume. A typical rule has emission limits of 0.3 grains per standard cubic foot of exhaust gases. Some districts have schedules which limit emissions in a variable way with exhaust gas volume emission rate (for example, from 0.3 grains per standard cubic foot for 883 cubic feet per minute or less of exhaust gas to 0.01 grains per standard cubic foot for 2,472,000 standard cubic feet per minute or more of exhaust gas).

4. Fuel Burning Equipment

These rules limit emissions of particulate matter from equipment which burns fuel to produce electric power with heat input greater than a specified minimum. Emissions may be restricted on a concentration basis or on a weight basis. Typical limitations are 10 pounds per hour and/or 0.01 grains per standard cubic foot of exhaust gas.

5. Fugitive Dust

These rules require sources of fugitive dust (particulate matter that, as a result of activities of human beings, becomes airborne without being emitted from a stack) to take measures to prevent such fugitive dust emissions. In some APCDs, these rules specify methods for measuring violations and methods to prevent emissions from various sources.

6. Combustion Contaminants

These rules limit the discharge of particulate matter from any combustion sources, other than power generating equipment, to a specified concentration. A typical limitation is 0.1 grains per standard cubic foot of exhaust gas.

7. Incinerators

These rules limit emissions of particulate matter from any incinerator or other equipment used to dispose of combustible refuse by burning, or equipment used to process combustible refuse. In many APCDs, equipment processing less than a specified amount of material is required to meet a less stringent emission limit than that required for larger equipment.

8.,8.1. Steam and Power Generating Equipment

These rules are similar to the fuel burning equipment rules (4), but emission limitations are on a concentration basis and vary between .01 and .05 grains per standard cubic foot.

9.0. Abrasive Blasting

These rules require abrasive blasting operations which are (a) confined blasting, (b) wet abrasive blasting, (c) hydroblasting, or (d) dry unconfined blasting using certified abrasive to meet Ringelmann No. 2. Operations not complying with one of the above methods shall be limited to Ringelmann No. 1.

9.1. Geothermal Well Drilling

During geothermal well drilling and existing geothermal well cleanout, particulate matter emissions are limited to a mass rate per hour that is dependent on the steam rating of the well.

Burning

10. Open Burning

These rules ban the disposal of combustible refuse by burning in open fires. Exceptions may be provided for specified types of fires and residential burning.

11. Orchard Heaters

These rules require the use of orchard and citrus heaters which have been approved by the ARB, or which discharge one gram per minute or less of unconsumed solid carbonaceous matter.

12. Incinerators

These rules generally require the use of multiple chamber incinerators to dispose of combustible waste.

13. Reduction of Animal Matter

These rules require all gases, vapors, and gas effluents from rendering operations to be incinerated at specified temperatures, usually 1200°F or greater, for a specified period of time, usually 0.3 of a second or longer.

#### 14. Pathological Incinerators

These rules provide for clean and safe incineration of pathological waste. Temperatures must be above 1500°F with a .5 second retention time.

#### 15. Agricultural Burning

These rules regulate agricultural burning, range and land improvement burning, and forest management burning. Permits are required for such burning.

Permissive-burn days and no-burn days are established by the ARB daily based primarily on meteorological conditions, and burning is prohibited on no-burn days. The amount, time, and methods of burning may be specified. Districts may administer programs more stringent than required by ARB as long as burning is not totally prohibited.

The purpose of this control measure is to reduce emissions on days when meteorological conditions are adverse. This, in turn, reduces ambient concentrations of PM, oxidant, NO<sub>2</sub>, and carbon monoxide.

The ARB is currently considering changes to the agricultural burning program.

#### 16. Mechanized Burners

These rules authorize, by permit, the disposal of agricultural wastes, wood wastes, and wood debris in a mechanized burner such that no air contaminants are discharged into the atmosphere that exceed Ringelmann No. 1 or the equivalent opacity of 20% for an aggregate period of 30 minutes in any eight hour period.

### Organic Compounds

#### 20. Storage of Organic Liquids

These rules require control equipment on organic liquid storage vessels, usually larger than 40,000 gallons' capacity, in which compounds are stored which have a vapor pressure greater than specified, usually 1.5 psi. The ARB is currently working with local APCDs to implement uniform requirements for the use of secondary seals on floating roof tanks, vapor recovery systems of 95% collection efficiency on fixed roof tanks, or equivalent measures.



21,22. Gasoline Transfer

Phase I rules require control equipment for the transfer of gasoline to bulk storage tanks.

Phase II rules regulate emissions from the transfer of gasoline into vehicle fuel tanks of greater than 5 gallon capacity. The vapor recovery is expected to be 95% efficient by weight for each phase.

23. Organic Liquid Loading

These rules prohibit the loading of organic liquids having a vapor pressure greater than specified amount (under actual loading conditions) into a tank or railroad tank car unless the loading facility is equipped with a vapor collection and disposal system. Facilities loading less than a specified amount daily may be exempted. Additional requirements may be specified for other facilities.

24. Oil-Effluent Water Separators

These rules prohibit the use of any vessel or device which recovers a specified amount, usually 200 gallons/day, of any petroleum product from effluent water from any equipment which handles hydrocarbons with a specified Reid vapor pressure, usually 0.5 psi, unless such a vessel or device is equipped with either a sealed cover, a floating pontoon, a vapor recovery system which is 90% efficient, or equivalent equipment.

25. Specific Equipment

These rules are directed to control organic compound vapor release from specific pieces of equipment such as vacuum producing devices, pumps and compressors, valves and flanges, and so forth.

25.1. Asphalt Air Blowing

These rules require that if air is blown through asphalt the gas emissions must be incinerated at not less than 1400°F for at least 0.3 of a second.

26. Organic Solvents

These rules limit to a specified amount, usually 15 pounds per day (or three pounds per hour), the emission of organic materials from any source where any organic solvents come into contact with flame, or are baked, heat-

cured or heat-polymerized in the presence of oxygen. The rules also limit the emission of organic materials from any source employing, applying, evaporating or drying any highly photochemically reactive solvent to a specified amount, usually 40 pounds per day (or eight pounds per hour). Highly photochemically reactive solvents are defined by the rule itself. Generally, sources employing or applying solvents are limited to a specified emission rate, usually 3,000 pounds per day (or 450 pounds per hour). Emissions are to be controlled by incinerators, adsorption, or special processing.

26.1,26.2. Architectural Coatings and Dry Cleaning

ARB has developed model rules for these categories that are discussed in the following section.

27. Gasoline Specifications

These rules address the degree of unsaturation of motor vehicle fuels. The bromine number can not be greater than 30.

28. Cargo Vessel Loading

An ARB model rule that is discussed in the following section.

Sulfur Compounds

30. Sulfur Oxide Emissions - refinery equipment and other industrial processes.

These rules limit to a specific concentration (usually 2,000 ppm or less) emissions of sulfur compounds which exist as a liquid or gas at standard conditions. Emissions are calculated as sulfur dioxide.

31. Sulfur Recovery Plants

Plants producing elemental sulfur are required by these rules to control the effluent process gas so that not more than 500 ppm of  $\text{SO}_2$ , 10 ppm of  $\text{H}_2\text{S}$ , and 200 pounds per hour of sulfur compounds measured as  $\text{SO}_2$  are emitted.

32. Sulfuric Acid Plants

These rules limit emissions from plants producing sulfuric acid to 500 ppm of  $\text{SO}_2$  and 200 pounds per hour of sulfur compounds measured as  $\text{SO}_2$ .

33. Fuel Burning Equipment - sulfur compounds

These rules limit to a specified amount the emissions of sulfur compounds from nonmobile fuel burning equipment. Emissions are calculated as sulfur dioxide. Typical APCD regulations require that  $\text{SO}_2$  emissions be limited to 200 pounds per hour.

34. Sulfur Content of Fuel

These rules prohibit the use of liquids and solid fuels which contain more than a specified amount of sulfur, usually 0.5% by weight. In addition, the use of gaseous fuels which contain more than a specified amount of sulfur compounds (usually 10 grains of  $\text{H}_2\text{S}$  per 100 cubic feet of gas) may be prohibited.

35. Geothermal Operations

Sulfur compounds are limited to an emission containing no more than 1000 ppm, expressed as  $\text{SO}_2$ , and hydrogen sulfide ( $\text{H}_2\text{S}$ ) is limited to 200 grams/gross wega watt hour) from geothermal power plants. Effective January 1, 1980, these plants must limit  $\text{H}_2\text{S}$  emissions to 100 grams/hour/GMW.

36. Scavenger Plants

The APCO may grant a permit to operate a sulfur recovery unit which is recovering pollutants which would otherwise be emitted into the atmosphere. The total emissions must be substantially less with the plant in operation than when closed, and usually must meet a specified emissions limit.

Other Pollutants

40. Oxides of Nitrogen - fuel burning equipment

These rules limit to a specified amount the emissions of oxides of nitrogen from fuel burning equipment. Emissions are calculated as nitrogen dioxide. There may be several rules which regulate nitrogen oxide emissions from specific types of equipment, for example, electric power generating equipment, and steam generating equipment. Emission limits may be based on a weight rate (e.g., 140 pounds per hour), or on concentration (e.g., 125 ppm). Different emission limits may be specified for sources using gaseous, liquid, or solid fuel, or any combination thereof.

#### 41. Fluorine Compounds

These rules place limitations on fluorine emissions from sources such as phosphate fertilizer plants, ceramic plants, etc. Typically the limits are 10 grams of total fluoride per metric ton of process feed. Because these rules do not address national standards, they are not a part of the SIP but are described here for informational purposes.

#### 42. Carbon Monoxide

Emissions of CO from any source except the internal combustion engine are limited by these rules to 2000 ppm measured on a dry basis for 15 consecutive minutes.

#### 43. Lead

Emissions of any lead compound are restricted to 15 pounds per day and a ground level concentration not greater than 1.0 micrograms per cubic meter.

#### 44. Livestock Feed Yards

These rules require control of fugitive dust emissions and odors from large livestock feed yards.

### General Provisions

APCD rules and regulations usually include a section called General Provisions. This category includes definitions, requirements for reporting emissions and air quality data, a description of the APCO's powers, and other information of importance.

#### 50. Definitions

Definitions are related to all rules and regulations; those definitions specific to a given rule or regulation are usually found in that rule or regulation.

#### 51. Nuisance

These rules, which are also part of state law, prohibit the discharge of air contaminants or other materials which cause injury, detriment, nuisance, or annoyance to a number of persons or which endanger the comfort, health, and safety of any such persons or cause injury or damage to business or property. These rules are one of the few instances in which state law prohibits issuance of a variance.

## 52. Circumvention

These rules prohibit anyone from building, erecting, installing, or using any equipment, the use of which, without resulting in a reduction in total release of air contaminants, would reduce, dilute, or conceal air contaminants which would otherwise be in violation of the Health and Safety Code or of the district rule and regulations.

### Separation/Combination of Emissions

These rules regulate the method of calculation of emissions where emissions are either separated or combined prior to emission. Where air contaminants from a single source are separated before emission, the total emissions of such air contaminants are to be the product of the highest concentration at any emission point and the exhaust gas volume through all emission points, unless actual test data indicate otherwise. Where air contaminants from two or more source operations are combined prior to emission, the rules and regulations are to be applied to the combined emission as if it were a single source operation, unless there is an adequate and reliable means for separating the components of the combined emissions. In such case, the rules and regulations shall apply to each source operation separately.

## 53. Breakdown Provisions

Emissions resulting from an unforeseeable equipment breakdown and exceeding emission limitations or other standards specified in local rules may be excused from prosecution by the APCO providing specified reporting and operating requirements are met. The duration of the breakdown covered by this provision is usually limited to 24 hours.

## 54. Emergency Episode

These rules are required by the State Air Pollution Emergency Plan (see Chapter 21) in 19 APCDs and are to prevent air pollution concentrations from reaching levels which could endanger or cause significant harm to the public health or to abate such concentrations, if they should occur.

The rules establish episode criteria for Stage I, Stage II, and Stage III for oxidant. In addition, criteria for carbon monoxide, sulfur dioxide, oxidant in combination with sulfur dioxide, and sulfate in combination with oxidant have been established in some districts. Abatement actions to reduce these concentrations are defined for each stage. If such actions do not abate the episode, the ARB may take action.

## 55. Source Monitoring, Recordkeeping

Monitoring rules require specified sources to install and operate continuous monitoring equipment when requested to do so by the APCO. The monitoring equipment shall be capable of monitoring emissions levels within  $\pm 20\%$  with confidence levels of 95%. Persons operating or using the following equipment are required to install instack monitors.

	<u>Type of Source</u>	<u>Pollutant Monitored</u>
i	Steam Generators ( $>250$ million BTU/hr and use factor $\geq 30\%$ )	NO <sub>x</sub> and CO <sub>2</sub> or O <sub>2</sub> and opacity
ii	New Nitric Acid Plants	NO <sub>x</sub>
iii	Sulfuric Acid Plants and Sulfur Recovery Plants	SO <sub>2</sub>
iv	CO Boilers of FCC Units,* New Fluid Cokers, and Existing Fluid Cokers $> 10,000$ bbl/day	CO

\*Fluid catalytic cracking units.

Monitoring records are to be kept for two years, during which time they are to be available to the APCO.

## 56. Public Availability of Data

These rules classify as public information all analyses, or plans, or other specifications that disclose the nature, extent, quantity, or degree of air contaminants or other pollution from any sources. All air monitoring data and other data, such as emission data, are also classified as public records. Records, with the exception of air pollution emissions data, may be protected as trade secret if the source proponent demonstrates to the APCO's satisfaction that such protection is warranted.

## 57. Authority to Arrest

This provision enables enforcement by the APCO and other district personnel of all rules and regulations.

58.,59. New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAPS)

The EPA established standards of performance (NSPS)\* for new, modified, and reconstructed stationary sources that may contribute significantly to air pollution which causes or contributes to endangering of public health and welfare. These standards include the categories of stationary sources and the affected facilities to which the standards apply; the pollutants which are regulated and the levels to which they must be controlled; and the requirement for monitoring emissions.

The EPA also sets emission standards for hazardous pollutants (NESHAPS) to which no ambient air quality standard is applicable. The standards are to provide an adequate margin of safety to protect public health where the pollutant may cause, or contribute to, an increase in mortality or in serious irreversible, or incapacitating reversible, illness. Four pollutants (asbestos, beryllium, mercury and vinyl chlorides) are currently covered.

When these categories of NSPS or NESHAPS have been established, districts may request delegation of authority to implement and enforce any of the standards. In the absence of delegation, EPA enforces the standards. As of January 1979, the EPA has promulgated 27 NSPS categories and 4 NESHAPS. Table 4-8 summarizes, by APCD, the NSPS categories and NESHAPS for which delegation has been requested and/or received.

Some rules and regulations relating to NSPS indicated in Table 4-8 have not been, and will not be, submitted to the EPA as revisions to the SIP either because they do not pertain to the attainment or maintenance of NAAQS or because the ARB has disapproved the rules for technical or other reasons. Additionally, some of the rules and regulations relating to NESHAPS have been included for informational purposes only since they do not relate to NAAQS.

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\*NSPS may be more or less stringent than California APCD rules and regulations, depending on a variety of circumstances. On a national basis, they provide a performance (emission control) "baseline" for new sources in the categories for which standards are promulgated.

## TABLE 4-8

X = Perceived Delegation from EPA



## Permit System

The APCD permit system is designed to assure that construction or operation of sources will comply with the district's rules and regulations, and will not interfere with attainment or maintenance of ambient air quality standards. It usually consists of requirements for Authority to Construct, Permit to Operate, and procedures for New Source Review.

### 60.,61. Authority to Construct and Permit to Operate

The district regulations require a source owner to obtain an Authority to Construct (A/C) before construction of a new source or modification of an existing source. The A/C is issued only after the air pollution control officer (APCO) has made the determination that the operation will be capable of meeting all district rules and regulations. If, in the judgment of the APCO, there is a possibility that the proposed new source or modification will not comply with all district rules or regulations, conditions on the approval of the A/C may be imposed to assure compliance. The APCO may also require installation of scaffolding, sampling ports, or in-stack monitoring devices. The A/C is valid for a specific period of time or until the source is in operation, unless otherwise specified.

A Permit to Operate (P/O) must be obtained prior to the operation of a source constructed pursuant to an A/C. Some districts also require a source owner to renew the P/O periodically (usually annually or biennially).

Some APCDs require a permit to rent before a person can rent an incinerator, or rent, for less than a specified period of time, other specified air contaminant-emitting equipment. The APCD may require renewal of the permit to rent. The permit to rent, and application for renewal of permit to rent, must be denied unless the APCO is satisfied the operation will comply with all APCD's rules and regulations.

Exemptions to the A/C or P/O requirements are specified for a number of sources which are not in the jurisdiction of the APCD or in the judgment of the APCO are insignificant sources of air pollution. District regulations require that application for an A/C or P/O be on the forms provided by the APCO. The APCO is required to act on an A/C or P/O within a specified period and to notify the applicant in writing of the decision. The applicant may appeal any denial of an A/C or P/O to the district's

hearing board. The applicant may assume the application is approved if the APCO has not acted within a specified period of time. The applicant for an A/C, P/O, or permit to rent is required to pay a fee in most districts to cover cost of the determinations required before the A/C, P/O, or permit to rent can be issued.

## 62. New Source Review\*

New Source Review (NSR) is a general emission growth control regulation, required throughout the United States, which is superimposed on existing emission regulations. NSR is intended to prevent new or modified sources from causing or aggravating violations of ambient air quality standards. Although all APCDs have NSR rules, the Clean Air Act, as amended in 1977, requires such rules to contain provisions not in current rules. The ARB has approved a new model NSR rule which complies with these requirements. All APCDs have been requested to amend their NSR rules to be consistent with the model rule. The model NSR rule contains a provision which requires the review of permits for construction or modification of major stationary sources. The rule, as required by the Act, specifies the minimum provisions for this permit program.

As discussed in previous section, before stationary sources can be constructed or modified, a permit to construct (called an authority to construct in some districts) must be issued by the APCD in which the source will be located. All districts have rules, separate from the NSR rules, which identify those sources for which permits are required. Under the model NSR rules, large new or modified sources are required to comply with all applicable air quality rules and regulations before a permit can be issued. In addition, the model rule further requires that all other stationary sources in the state which are owned or operated by the applicant be in compliance, or on an approved schedule for compliance, with all applicable emission limitations and standards which are part of the SIP approved by the EPA. For all stationary sources with a net increase in emissions over a specific amount (250 pounds per day) of any pollutant for which there is a national ambient air quality standard, or any precursor of such a pollutant, mitigation measures will be required. These sources must use the best available control technology which will result in the maximum degree of emission control. Offsets will also be required to fully mitigate the increase in all emissions from the new or modified source, if the source wishes to locate in an area where standards are being violated.

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\*Although "new" sources are referenced this strategy also applies to existing sources undergoing modification.

The model NSR rule clearly defines the obligations of the applicant, the procedure for calculation of emissions from the proposed sources and, if required as a mitigation measure, the procedure for calculation of emissions reductions from any offset source. Modeling may be used in very limited situations and is subject to approval by the ARB. This rule also includes provisions which allow banking of excess emissions reductions. Interpollutant exchanges for precursor pollutants are allowed under this rule if the exchange will not cause a new violation, or contribute to an existing violation of any ambient air quality standard.

The regulatory procedure for power plant siting incorporated in this model rule is consistent with the agreement between the California Energy Commission and the Air Resources Board. This procedure encourages district participation in Energy Commission proceedings and provides the mechanism whereby the district conditions any permit issued by the CEC so as to fully mitigate any air quality impacts of the proposed power plant.

The existing and model NSR rules allow public participation and include decision timetables and public comment periods. After a preliminary decision is made by the APCO, the public is given 30 days for review and comment on the decision. Within 180 days after accepting the application as complete, the APCO must take final action on the application after considering all written comments.

A copy of ARB's model NSR rule is included in Appendix 4B.

#### Fees

##### 70. Permit and Authority to Construct Fees

The APCDs are authorized by state law to establish a system of fees to cover the cost of administering the program for which the fee is required. For example, most districts have established a schedule of fees for issuing Authorities to Construct or Permits to Operate. Application for variance usually requires payment of a fixed fee. In addition, some districts charge for source analyses, reports and technical documents, and copies of the district rules and regulations.

## 71. Emission Charges

The South Coast AQMP is authorized to vary their fees according to the quantity of emissions and the effect of such emissions on the ambient air quality. This system provides an incentive for emission control. Enabling legislation is required to institute emission charges in other districts.

## B. Model Rules

The rules and regulations discussed in the previous subsection are the product of over thirty years of work by the California Air Pollution Control Districts (APCDs). The control philosophy embodied in most of these rules has been changing in recent years. Previously, rules had been adopted that apply to a general category of pollution control (e.g., organic compounds). More recently, a source specific approach has been taken (e.g., can and coil coatings, cutback asphalt, etc.). These newer rules and regulations are more equitable and cost-effective. EPA has contributed to this source specific control strategy approach by evaluating available control technology for 15 sources of organic gases and publishing control technique guidelines (CTGs) for each. ARB is implementing the newer approach through its development and adoption of model rules, many of which are based on EPA's CTGs. In this subsection, the control measures available to the districts through these model rules are presented. A few adopted model rules were included in the control measures listed previously. They are, however, briefly discussed here again to make the treatment of model rules comprehensive. In other cases, the name of a rule or regulation that appeared in Table 4-7 may be the same as that used for a model rule, but the requirements of the rule listed are not consistent with those of the model rule. The process of developing and adopting model rules is discussed below and a description of each control method included along with a schedule for local districts' adoption of consistent rules in the future.

### 1. Model Rule Process

Both state and federal laws require that appropriate steps be taken to attain and maintain ambient air quality standards. In the case of the national standards, the Clean Air Act, as amended in 1977, requires that the states submit to EPA, before July 1979, plans describing how the national standards will be attained by December 31, 1982. The Clean Air Act also states that these plans are to require the utilization of all reasonably available control technology.

The model rule process has been an effective mechanism for coordinating the statewide development of uniform strategies for the control of emissions from stationary sources. Through this process, state-of-the-art, economically reasonable, and technologically feasible rules are developed; that is, model rules represent reasonably available control technology. In this way, the Board has been able to effectively give technical assistance to the districts as provided by Section 39605 of the Health and Safety Code; to coordinate, encourage, and review local air pollution control efforts as required by Section 39500 of the Health and Safety Code; and to coordinate districts' activities needed to comply with federal law as required by Section 39602 of the Health and Safety Code.

The concept of statewide model rules allows the Board to use its extensive resources and legislatively mandated research and emission inventory programs to help develop effective rules. By doing so, the Board is able to maintain a broad perspective on California's air quality problems and to encourage uniformity among districts' rules insofar as is practicable. Without such consistency, a severe burden might be placed on industry, particularly small and diversified industries, if a different rule were adopted in each air pollution control district. However, there is some variability between districts since the district's rules are only based on an ARB model.

Although most model rules are developed by the staff and through research contracts which are administered by the staff, the districts are encouraged to participate in this process. For example, the staff's efforts to develop model rules regarding solvent usage have been combined with contributions from a number of districts' staffs through the Organic Solvent Regulation Study Group (ORGSOL).

Before model rules are formulated, the staff holds workshops with representatives of affected industries, consults with districts, and collects data through surveys. The staff explores potential control technology and evaluates the feasibility of applying such technology to the control of sources to be covered by the model rule. Proposed rules are evaluated to ascertain their cost effectiveness and their impacts on emissions, other aspects of the environment, and the economics of the affected sources.

When the staff's work to develop and evaluate a proposed model rule is complete, the proposed model rule and a comprehensive staff report are presented to the Board at a public meeting. After comments from the public have been heard, the Board decides whether to approve the model rule. Generally, the Board either approves the model rule subject to modifications, or the Board refers the proposal back to the staff for further work.

## 2. Model Rules: Approved and Planned

The suggested vapor recovery rules which were approved by the Board in April of 1975 were the first ARB approved model rules. To date, model rules have been approved to regulate emissions of organic compounds, oxides of nitrogen, particulate matter, and oxides of sulfur from 14 source categories. For those model rules which have been approved by the Board, staff reports which contain the model rule and discuss the technical feasibility and economic impact are available upon request. Table 4-9, "Proposed Schedule for Adoption of Rules," indicates the implementation schedule for those rules which have been approved by the Board and those which the staff plans to develop over the next few years.

The EPA has evaluated the available control technology for 11 sources of organic gas emissions, and control techniques guidelines (CTGs) were published for each of these sources before December 31, 1977. EPA requires that all 1979 State Implementation Plans (SIPs) for controlling oxidant include as a minimum enforceable rules based on these CTGs. In addition, prior to December 31, 1978, EPA published CTGs for an additional 9 sources of organic gas emissions. EPA requires that all 1979 SIPs for controlling oxidant include a commitment to adopt enforceable rules based on the CTGs before January 1, 1980. To comply with these requirements, the staff has been developing model rules based on these CTGs. Some of the CTGs cover types of sources not common in California (for example, magnetic wire varnish) and in these instances the staff has relied upon districts where such sources exist to develop rules based on the CTGs. The staff has concentrated on sources of greater statewide significance, thereby providing model rules which are capable of achieving more emission reductions than are required by the CTGs and in a more cost-effective manner.

In addition to the model rules discussed above, the staff has completed a revised model new source review rule which is designed to comply with Clean Air Act requirements.

Table 4-9

ARB SCHEDULE FOR ADOPTION OF RULES

This schedule applies to all metropolitan nonattainment areas. For all other areas, the schedule will be determined on a case-by-case basis.

CATEGORY I - To be adopted by local air pollution control district before 5/31/79, or by ARB for district before 6/30/79, if necessary.

ORGANIC COMPOUNDS

Architectural coatings\*\*\*  
Automotive assemblyline coatings\*\*\*  
Can and coil coatings\*\*  
Cutback asphalt\*  
Dry cleaning (petroleum)\*\*\*\*  
Fixed roof tanks at refineries, terminals, and other facilities\*\*\* (Storage of organic liquids)  
Floating roof tanks at refineries, terminals, and other facilities\*\*\* (Storage of organic liquids)  
Gasoline vapor recovery\*\*\*  
Manufactured metal parts and products coatings\*\*  
Marine lightering operations\*\*\*  
Oil/Water gravity separation devices  
Paper and fabric coating operations\*\*  
Process turnarounds at refineries and other facilities  
Refinery vacuum producing equipment  
Solvent metal cleaning (degreasing)\*\*  
Valves and flanges at oil refineries\*\*\*

OXIDES OF NITROGEN

Electric utility boilers\*\* (SCAQMD, Ventura only)  
Gas-fired, fan type central furnaces\*\*\*

OXIDES OF SULFUR

Coke calcining\*\*\* (SCAQMD only)  
Marine lightering operations\*\*\*  
Oil field steam generators\*\*

PARTICULATE MATTER

Coke ovens\*\*\*

\*Model rule not yet developed.

\*\*Model rules delegated to E.O. for revisions and final approval.

\*\*\*Model rules approved by the Board prior to 10/78.

\*\*\*\*Rule approved by E.O.

TABLE 4-9 (Cont'd)

CATEGORY II - To be adopted by local air pollution control district before 12/31/79, or by ARB for district before 6/30/80, if necessary.

OXIDES OF NITROGEN

Internal combustion engines (stationary only)  
Oil field steam generators\*\*

CATEGORY III - To be adopted by local air pollution control district before 6/30/80, or by ARB for district before 12/31/80, if necessary.

ORGANIC COMPOUNDS

Dry cleaning (perchloroethylene)  
Graphic arts  
Marine coatings  
Pharmaceutical products manufacture  
Rubber tire manufacture  
Vegetable oils

OXIDES OF NITROGEN

Electric utility gas turbines (Santa Barbara, Ventura, San Diego, SCAQMD only)  
Glass melting furnaces  
Refinery heaters, boilers, CO boilers, and CO furnaces (SCAQMD, Ventura only)

OXIDES OF SULFUR

Electric utility boilers (SCAQMD, Ventura only)  
Sulfuric acid plants (Fresno, San Joaquin, Kern only)

CATEGORY IV - To be adopted by local air pollution control district before 12/31/80, or by ARB for district before 6/30/81, if necessary.

ORGANIC COMPOUNDS

Automobile refinishing  
Marine vessel operations  
Oil production well vents under steam stimulation  
Organic waste solvent disposal  
Valves and flanges at oil production fields  
Wood furniture



OXIDES OF NITROGEN

Cement manufacturing kilns  
Electric utility boilers  
Industrial and commercial boilers

OXIDES OF SULFUR

Cement manufacturing plants  
Coke calcining (Kern only)  
Electric utility turbines (SCAQMD, Ventura only)  
Electric utility combined cycle plants (SCAQMD, Ventura only)  
Marine vessels  
Sulfur in fuel (SCAQMD, Ventura only)  
Sulfur recovery plants (SCAQMD only)

PARTICULATE MATTER

Fossil fuel-fired utility boilers

CATEGORY V - To be adopted by local air pollution control district before 6/30/81, or by ARB for district before 12/31/81, if necessary.

ORGANIC COMPOUNDS

Fixed roof tanks at oil production fields  
Floating roof tanks at oil production fields  
Secondary oil/water separation operations at petroleum refineries

OXIDES OF NITROGEN

Electric utility combined cycle plants (San Diego, SCAQMD only)  
Refinery heaters, boilers, CO boilers, CO furnaces (Kings, Santa Barbara, Kern only)  
Secondary metal furnaces  
Water heaters

OXIDES OF SULFUR

Electric utility boilers (San Diego only)  
Fluid catalytic cracking units (Kern only)  
Sulfur in fuel (San Diego only)

PARTICULATE MATTER

Fossil fuel-fired utility boilers (San Diego only)

TABLE 4-9 (Cont'd)

CATEGORY VI - To be adopted by local air pollution control district before 12/31/81, or by ARB for district before 6/30/82, if necessary.

ORGANIC COMPOUNDS

Chemical manufacturing  
Pesticides  
Flat woodstock

OXIDES OF SULFUR

Catalytic cracking units (Kern only)  
Electric utility boilers (Kern, Monterey, San Luis Obispo only)  
Fluid cokers (Kern only)  
H<sub>2</sub>S flares (SCAQMD, Santa Barbara only)  
Sulfur in fuel (Kern, Santa Barbara, Monterey, San Luis Obispo only)  
Sulfur recovery units (Santa Barbara only)

OXIDES OF NITROGEN

Electric utility boilers (Kern, Monterey, San Luis Obispo only)

PARTICULATE MATTER

Fossil fuel-fired utility boilers (Kern, Monterey, San Luis Obispo only)

## CATEGORY I - ORGANIC COMPOUNDS

### Architectural Coatings

Architectural coatings are paints and other coatings that are applied to stationary surface structures, and their appurtenances. Architectural coatings include air-dried coatings that are applied by spray, brush, or roller to surfaces and structures such as buildings, pavements, or curbs, but do not include industrial coatings, which are generally applied by a wider variety of methods, commonly oven cured, and used on items made in factories. The major users of architectural coatings are homeowners and painting contractors.

The uncontrolled use of architectural coatings and the associated use of solvents for thinning and cleaning up generate organic gas emissions of over 190 tons per day throughout the state. Because coatings are applied in thin layers to exterior and interior surfaces, it is not practical to duct the emissions through control devices such as afterburners and carbon adsorbers.

Based on information developed by the Organic Solvent (ORGSOL) Regulation Study Group, there are commercially available waterborne low-solvent coatings that are substantially equal in performance and costs to the high-solvent coating for many architectural coating applications. In addition, recent advances in coating technology indicated that adequate low-solvent substitute coatings may be available for use in all categories of architectural coatings within five years.

### Automotive Assembly Line Coatings

This model rule would require that by December 1, 1984, no person shall apply to any light or medium-duty vehicle on an application line any primer or topcoat which emits volatile organic compounds in excess of 275 grams per liter of coating as applied excluding water. This level would require the auto companies to apply low solvent coating, including but not limited to, waterborne, high solids, or powder coatings. Incorporated in the rule are interim steps in 1980 of 350 grams per liter for primer and 590 grams per liter for topcoat. An alternative interim step to be met by 1982 of 400 grams per liter for primer and 380 grams per liter for topcoat is also incorporated in the model rule.

### Can and Coil Coatings

Can and coil coatings are those coatings applied to the internal and external surfaces of containers, pails, drums, collapsible tubes, and other containers; and to flat stock and coiled metal for metal protection and to enhance the esthetics. The major portion of can and coil coating facilities are located in the state's urban areas. The application of can and coil coatings generates organic compound emissions of approximately 34 tons per day.

The proposed model rule would control emissions largely through the use of waterborne coatings. At least one can coating facility in California is using waterborne coatings exclusively, and a substantial portion of others have either committed a production line or are experimenting with the commercial application of waterborne systems. Waterborne coatings replacing the solvent-borne coatings in the can coating categories responsible for the major portion of the emissions are either commercially available or are in the final stages of laboratory evaluation.

Other methods for emission control are the use of high solids coatings and/or incinerators. Incinerators operating with an efficient volatile emissions capture system can reduce intake emissions by approximately 80 percent.

The use of incinerators to control emissions from coil coating lines is substantially more efficient than for can coating lines. In fact, staff estimates that the capture system for coil coating operations is about 85 percent efficient and currently reduces emissions to below the limits established by the proposed model rule.

#### Cutback Asphalt

The control measure proposes prohibiting the use of rapid cure (RC) cutback asphalts starting June 1, 1979, and limits the use of medium curing (MC) asphalt in California, starting June 1, 1980, to those applications for which a suitable emulsified system does not now exist. The rule also proposes prohibiting the use of all cutback asphaltic materials after January 1, 1982 and establishes a maximum volatile organic compound (VOC) content of emulsifiable systems to 3% by volume.

Asphaltic cutbacks are defined as asphalt cements that have been diluted with petroleum solvents and as further defined by American Society for Testing and Materials (ASTM) specifications D2027 and D2028.

#### Dry Cleaning (Petroleum)

This model rule would require all dry cleaners which consume more than 50,000 liters of petroleum solvent per year to control organic emissions within two years through the use of a carbon adsorber or other control device with a control efficiency of at least 90 percent. Dry cleaners which use less than this amount but more than 10,000 liters per year are allowed more time to comply with this section. Also incorporated in the rule is the requirement for good housekeeping practices and proper disposal of the used filtering material. Dry cleaners which consume petroleum solvents are given 60 days from the date the rule is adopted to comply.

### Fixed Roof Tanks at Refineries, Terminals, and Other Facilities

A fixed roof tank consists of a steel cylindrical shell with a permanently affixed roof. Most such tanks are designed to operate at only slight internal pressure or vacuum and, as a result, the emissions from breathing, filling, and emptying can be appreciable. Breathing loss is the expulsion of vapor from the tank due to expansion and contraction resulting from diurnal temperature and pressure changes. Such losses occur in the absence of any liquid level change in the tank. Filling losses are associated with an elevation of the liquid level in the tank. Emptying losses occur when air drawn into the tank becomes saturated with hydrocarbon vapor and expands such that it exceeds the capacity of the vapor space. Combined filling and emptying losses are termed working losses. The Air Resources Board has approved a model rule specifying that fixed roof tanks containing organic liquids be fitted with either an internal floating roof with a secondary seal, or with a vapor recovery system. Many fixed roof tanks in California are adequately controlled at present.

### Floating Roof Tanks at Refineries, Terminals, and Other Facilities

Large tanks for the storage of organic liquids are usually equipped with external roofs floating on the surface of the liquid inside the tanks, rising and falling with the liquid level. To minimize emissions, a closure device must be used to seal the gap between the tank shell and the floating roof. The Air Resources Board has approved a model rule containing roof-seal gap criteria and has submitted it to the districts with a request that it be incorporated into the districts' rules and regulations. Some districts, including the South Coast Air Quality Management District, have adopted suitable rules to control organic gas emissions from floating roof tanks.

### Gasoline Vapor Recovery

This tactic will require 95 percent vapor recovery as specified in the ARB suggested vapor recovery rules, amended August 9, 1978. Rules cover vapor emissions from gasoline terminals, bulk plants, and service stations during transfer operations and storage.

### Manufactured Metal Parts and Products Coatings

Manufactured metal parts and products include any metal parts and products manufactured under the Standard Industrial Classification code of Major Group 25 (furniture and fixtures), Major Group 33 (primary metal industries), Major Group 34 (fabricated metal products), Major Group 35 (nonelectrical machinery), Major Group 36 (electrical machinery), Major Group 37 (transportation equipment), Major Group 38 (miscellaneous manufacturing industries) with the exception of automobiles, light-duty trucks, aircraft, aerospace vehicles, marine vessels, cans, coils, and magnetic wire.

A model rule for this category has been approved by the Air Resources Board. Coatings used in this source category generally contain about 75 percent organic solvent, almost all of which evaporates as the coating dries. Control will be accomplished in two ways, both of which are commercially available and currently used in a number of coating operations. The first method is to require the use of low-solvent coatings which emit no more than 340 grams of volatile organic compounds (VOC) per liter for air-dried or forced-dried coatings and 275 grams per liter for baked coatings, excluding water, or an equivalent emission control measure. A more stringent limit of 180 grams per liter, excluding water, will be applicable to new sources utilizing baked coatings. The second method of control requires a minimum application efficiency of 65 percent. As a result of higher application efficiency, there is less overspray, and therefore, less emissions.

Two exemptions are provided to minimize economic impacts to small companies which do not produce large amounts of emissions. The first exempts facilities which emit less than 20 pounds of VOC per day. This exemption provides for the use of small amounts of specialty-type coatings on production lines which utilize predominately complying coatings or lacquers for touch-up and repair provided that the total use of noncompliance coatings does not exceed 20 pounds of VOC per day. The second exemption allows touch-up and repair to be done without a requirement for minimum application efficiency.

#### Marine Lightering Operations

When an organic liquid is pumped from one marine vessel to another, organic gases are displaced from the cargo tanks receiving the cargo. Organic gases are also displaced to the atmosphere during the washing, gas-freeing, purging, or ballasting of the cargo tanks of a marine lighter. The model rule requires that lighter loading emissions be reduced by 95 percent and prohibits emissions associated with tank washing, gas-freeing, purging, and ballasting. Staff believes that most lighter operators would reduce loading emissions through use of vapor balance systems which would transfer displaced organic gases from the receiving lighter to the parent vessel. Compliance with the prohibitions against emissions from tank washing, gas-freeing, and purging can be achieved by conducting such operations outside California Coastal Waters. Compliance with the prohibition against ballasting emissions can be accomplished by ducting displaced vapors through a common cargo tank vent header into tanks being emptied of organic liquid cargo or by employing segregated ballast systems.

#### Oil/Water Gravity Separation Devices

In the first stage of refinery waste water treatment, oily water is passed through a quiescent basin in which oil rises to the surface and is skimmed away. Usually, the process is repeated in at least one more such basin. The control measure would require the enclosure of any such

basin if the recovered oil from that basin has a Reid Vapor Pressure greater than a specified level and if more than a specified amount of oil is recovered per day. Enclosure would be accomplished by: (a) a solid cover over all liquid contents with all openings normally closed, (b) a floating pontoon or double-deck cover with gaps between basin walls and cover seals not exceeding specified gap criteria, or (c) a vacuum-assisted vapor recovery system. The measure would satisfy recommendations by the Environmental Protection Agency (reference: EPA 450/2-77-025).

#### Paper and Fabric Coating Operations

Among paper and fabric products that are coated with compounds containing organic solvents are magnetic tape, packaging paper, adhesive tape, book covers, post cards, office copier paper, drafting paper, carbon paper, pressure sensitive tape, typewriter ribbon, photographic film, fabric reinforced plastics, and woven fabric or vinyl coated fabric sheets.

Statewide emissions of volatile organic compounds from 29 paper coaters and 13 fabric coaters are more than 33 tons per day. The majority of these sources are located in the South Coast Air Basin and the San Francisco Bay Area Air Basin.

Most of the emissions (at least 90 percent) from paper and fabric coating operations emanate from the curing ovens. Control devices, such as afterburners and carbon adsorbers, are very effective in controlling these emissions.

One third of the paper and fabric coating operations in the state currently use control devices to treat the exhaust stream from their ovens. Examples of the use of carbon adsorbers, incinerators, and water scrubbers by firms in this industry illustrate the technical feasibility of this technology.

#### Process Turnarounds at Refineries and Other Facilities

This measure would require the control of process vessel depressurization and purging emissions until the concentration of organic material in the exiting gases falls below ten percent by volume calculated as butane at standard conditions. The measure would satisfy recommendations for such sources by the Environmental Protection Agency (reference: EPA 450/2-77-025). No comparable local regulations presently exist. Currently, the usual practice in California refineries for depressurizing process vessels involves venting the gases to flare or, in a few cases, to fireboxes or gas recovery. The residual vapors in the vessel, at 15 to 20 psi, are then purged with steam or, if the vessel contains catalyst, by nitrogen. The purge stream is commonly also sent to flare, but in some cases is vented to the atmosphere.

### Refinery Vacuum Producing Equipment

The measure would apply to all refinery process vessels equipped with steam ejectors, vacuum pumps or other vacuum-producing devices which withdraw vapors. The measure would satisfy EPA recommendations (reference: EPA 450/2-77-025). Only two vacuum systems, in Kern County, are known to require new controls to satisfy the measure. The measure would limit emissions to 20 pounds of organic gases per day, including non-condensable organic gases and organic gases evaporated from condensed liquids, from all vacuum producing devices together on any process vessel. Most refineries already accomplish the control by venting emissions to flare or firebox.

### Solvent Metal Cleaning (Degreasing)

Applies to all cold cleaners, vapor degreasers, and conveyORIZED degreasers which employ organic solvents in the removal of soluble impurities from metal surfaces. Current regulations require 85 percent control of photochemically reactive emissions. For nonphotochemically reactive emissions, up to 3,000 pounds per day are allowed. Since most solvent metal cleaning operations emit less than 3,000 pounds per day, compliance with current regulations has been achieved merely by substitution of photochemically non-reactive solvents for photochemically reactive solvents.

Current data indicate that some of the compounds considered nonphotochemically reactive in this control strategy are indeed photochemically reactive. Also, some compounds which are low in photochemical reactivity have been suspected of contributing to upper atmospheric ozone depletion. Thus, a more rational approach should be aimed at reduction rather than substitution. Control technology to reduce hydrocarbon emissions from solvent metal cleaning is available and has been incorporated into the ARB model rule. The model rule requires implementation of operating procedures which minimize solvent loss and retrofit of applicable control devices. Required operating procedures include covering degreasing equipment, reducing solvent drag-out on cleaned parts, and proper disposal of waste solvent. Applicable control devices vary, depending upon the size and design of the degreaser, and can be as simple as a cover for small degreasers or as complex as a carbon adsorption system or refrigerated freeboard chiller for open-top and conveyORIZED vapor degreasers. It is estimated that an average 50 percent reduction in emissions could be achieved through the implementation of this control measure.

### Valves and Flanges at Oil Refineries

This measure would require implementation of a maintenance and inspection program. A quarterly inspection program for liquid and gas service valves and an annual inspection for flanges would assure periodic maintenance. All leaks would be repaired within 24 hours or, if repair



would require the shutdown of a major process unit, during the next unit shutdown. Each gas service valve would be required to have an affixed record of inspections. The inspection requirement would be in addition to a basic no leak requirement. Some valves and flanges in gas service may require more than quarterly inspection and maintenance. The cost of this program considers petroleum savings which substantially exceed the costs of the program.

## CATEGORY I - OXIDES OF NITROGEN

### Electric Utility Boilers

The Air Resources Board has developed a rule for control of NOx emissions from power plants in the SCAB. Staff Report 78-10-1, dated August 7, 1978, which contains the model rule should be referred to for additional information.

### Gas-fired Fan Type Central Furnaces

This model rule will require that furnaces sold after January 1, 1984, emit no more than 12 nanograms per joule of useful heat delivered to the heated space, except for furnaces larger than 51.3 kW and those combined with an air conditioner larger than 19.0 kW, which will be required to comply by January 1, 1986. Exemptions are included for furnaces other than forced air type, as well as furnaces installed in mobile homes and in recreational vehicles. This level can be met by redesigning burners to provide greater control of the combustion process. Enforcement would consist of a self-certification by the manufacturers, with occasional spot checking by district personnel, or a contractor of the district. A list of complying units compiled and updated by district personnel could be distributed to local building inspectors who could easily check the compliance status of the furnace model during the building permit review process. This last step, however, would require either a local ordinance, a state law, or an interagency agreement in order to function.

## CATEGORY I - OXIDES OF SULFUR

### Coke Calcining

Petroleum coke is a by-product of a process to convert residual oil into naphtha and gas oil fractions. Raw coke can be calcined to eliminate volatile impurities and be sold to the aluminum industry as carbon electrodes. The burning of the coke dust in the kiln and in the incinerator results in emissions of sulfur oxides. Scrubbers and dry injection are two reasonable available control measures proposed by the ARB staff.

### Marine Lightering Operations

This measure will require that bunker fuels used by marine lightering vessels while in California Coastal Waters have a sulfur content not greater than 0.5 percent by weight. Marine lighters operating off California currently burn fuels having a sulfur content of about 2 percent by weight. The measure would also allow vessels to burn fuels having a sulfur content higher than 0.5 percent if the exhaust gases are treated to reduce sulfur dioxide emissions to the amount that would be emitted if 0.5 percent sulfur fuel were burned.

### Oil Field Steam Generators

This measure would require that emissions of sulfur compounds from existing oil field steam generators be reduced by about 79 percent and from new steam generators by about 90 percent. Oil field steam generators burn a part (about 20%) of the crude oil that is produced in order to enhance the production of crude oil. The crude oil produced in Kern County has an average sulfur content of about 1.1 percent. The capital cost of a scrubber for a 50 million Btu per hour steam generator is about \$200,000, and this would result in a cost of \$560 per ton of sulfur dioxide reduced. The cost per net barrel of oil produced would be about 42 cents.

### CATEGORY I - PARTICULATE MATTER

#### Coke Ovens

For coke oven ports, off take systems, and doors, general maintenance and replacement of faulty parts and luting of joints will reduce emissions to the level specified in the rule. For the pushing operation, a system must be installed to collect exhausted gases and remove the particulate matter contained therein. Equipment available includes hoods, onspot cars, and traveling hoods.

## CATEGORY II - OXIDES OF NITROGEN

### Internal Combustion Engines (Stationary)

This model rule is applicable to stationary internal combustion engines, including reciprocating engines and gas turbines, except for those in utility generation service or emergency standby generation. Also excluded are auxillary power units at airports, irrigation pumps, test stands, and portable construction equipment. This measure will require that internal combustion engines emit no more than 0.28 micrograms per joule of output, except for existing diesel engines, which may emit up to 3.0 micrograms per joule of output. For naturally aspirated gaseous fueled reciprocating engines, this will require the use of a reducing catalyst, while turbocharged reciprocating gaseous fueled engines and new diesel engines will require selective catalytic reduction. Turbines will require water injection or possibly combustor can modification, and existing diesel engines will only require operational modifications, such as fuel injection retardation.

Water injection for gas turbine engines is a readily available technology for which a great deal of operating experience has been obtained. Reducing catalysts for naturally aspirated gaseous fueled reciprocating engines have somewhat less operating experience, but still appear to be readily available. Selective catalytic reduction with ammonia is a technology which has been applied to other types of exhaust streams, with substantial operating experience, and could be readily transferred to lean-burning engines, such as two cycle gas engines and diesel engines. A demonstration project for each type of engine would be advisable. Problems are anticipated for the diesel engine application due to the presence in the exhaust of a fine, sticky mist of lubricating oil, which could physically coat and blind the catalyst. Vendors of selective catalytic reduction equipment are confident that this problem could be overcome, but emphasize the need for a demonstration on a pilot scale.

### Oil Field Steam Generators

Thermally enhanced oil recovery (TEOR) operations in California employ steam to force viscous crude oils through sand and rock strata to production wells. The steam is produced by burning fossil fuels, usually crude oil, in steam generators. This control measure would reduce nitrogen oxides emissions from existing steam generators and auxiliary boilers and heaters used in TEOR operations by the use of combustion modification techniques possibly in combination with noncatalytic ammonia injection. Emissions from existing generators would be reduced to 150 ppm. This represents a 64% reduction in emissions. The measure would also require that nitrogen oxides emissions from new steam generators and auxiliary boilers and heaters be reduced to 100 ppm, a 76% emissions reduction. The use of low excess air in combination with thermal DeNOx ammonia injection will probably be the control methods. The measure would apply to generators having a heat input capacity greater than  $5 \times 10^6$  Btu/hr.

### CATEGORY III - ORGANIC COMPOUNDS

#### Dry Cleaning (Perchloroethylene)

Perchloroethylene is used in the dry cleaning industry as a synthetic solvent used for the cleaning of garments and apparels. The principal steps involved in a dry cleaning process include: (1) one or more washes (baths) in solvent; (2) extraction of excess solvent by spinning, and (3) drying by tumbling in an air stream. The dry cleaning system has several sources of emissions. The major source is the dryer (known as the recovery tumbler or reclaimer). While every perchloroethylene dryer is equipped with a condenser, significant quantities of emissions occur from this source. The disposal of waste materials is the second most significant source followed by the losses from liquid and vapor leaks.

Controls from perchloroethylene dry cleaning systems consist of controlling organic emissions from the dryer's exhaust and effectively reducing the emissions from waste material disposal by proper operation of cookers and cartridge filters. Finally, leaks can be prevented by visual inspection and by periodic monitoring with a leak detection instrument.

#### Graphic Arts

The staff is currently developing a model rule for the control of volatile organic compound emissions from the graphic arts industry. Three major printing operations are being investigated: gravure, flexography, screen process.

A preliminary finding suggests that among the three types of printing operations, flexographic printing is expected to be the largest emission source, with VOC emissions well in excess of 20 tons per day throughout the state.

Statewide emissions of volatile organic compounds from the three types of printing operations are expected to exceed 30 tons per day. The majority of these sources are located in the South Coast Air Basin and the San Francisco Bay Area Air Basin. Emission controls for the printing industry include incineration or adsorption and/or use of a low solvent ink. It should be noted that specific control techniques are not applicable to all processes.

#### Marine Coatings

This tactic would require that all marine coatings must contain less than 295 grams of volatile organic compounds per liter of coating excluding water. This rule exempts the use of certain high performance coatings until 1982 which includes chlorinated rubber and vinyl coatings at 540 grams of VOC per liter of coating, polyurethanes at 420 grams of VOC per liter of coating, and epoxy coatings at 380 grams of VOC per liter of coating.

## Pharmaceutical Products Manufacture

Synthesized pharmaceuticals are normally manufactured in a series of batch operations according to the following sequence: (a) reaction (sometimes more than one), (b) product separation, (c) purification, and (d) drying. Each operation of the series may be a source of VOC emissions. The magnitude of emissions varies widely within and among operation categories and depends on the amount and type of VOC used, the type of equipment, and the frequency of performing the operation. The wide variation prevents calculating typical emission rates for each operation; however, an approximate ranking of emission sources has been established and is presented below in order of decreasing emission significance. The first four sources generally will account for the majority of emissions from a plant.

1. Dryers
2. Reactors
3. Distillation units
4. Storage and transfer
5. Filters
6. Extractors
7. Centrifuges
8. Crystallizers

Applicable controls for all the above emission sources except storage and transfer are: condensers, scrubbers, and carbon adsorbers. Incinerators are expected to have limited application but may be useful for certain situations. Storage and transfer emissions can be controlled by vapor return lines, vent condensers, conservation vents, vent scrubbers, pressure tanks, and carbon adsorbers. Floating roofs may be feasible controls for large, vertical storage tanks. Since many of these individual vents are likely to be small in any given plant, it may often be reasonable to regulate on a plant by plant basis.

## Rubber Tire Manufacture

Volatile organic compounds are added to rubber components to aid in mixing, promote elasticity, produce tack (stickiness), or extend (replace) a portion of the rubber hydrocarbons. Tire production includes the operations of component manufacture, assembly, and cure. Essentially all solvents used in tire manufacturing evaporate in the process.

Recommendations to reduce solvent emissions from tire manufacture are based upon exhaust gas treatment and process changes (principally lowering the solvent content of raw materials).

## Vegetable Oils

The manufacture of vegetable oil from seeds generally involves seep preparations, oil extraction, oil refining, and in the case of solvent extraction, desolventization and treatment of the desolventized flakes.

These processes account for potential emissions of several organic compounds: hexane solvent used in the extraction process; deodorizers used in heat exchangers; fatty acids removed from the vegetable oil; miscella (the mixture of solvent and oil); and the vegetable oil itself.

The largest single source of VOC emissions in vegetable oil plants is the extractor. It is estimated that over 60 percent of the emissions from vegetable oil plants is lost from the extractor if the extractor vent is controlled with only a chilled water condenser. Another 20 percent of VOC emissions are lost from the post desolventizer vents. This includes emissions from the desolventizer, dryer, cooler, and pneumatic conveyor.

According to an EPA study, extractor emissions from the vegetable oil manufacturing process can be reduced 90 to 95 percent with a properly designed and operated mineral oil scrubber installed after the condenser on the main vent. In addition, if proper desolventizer operation and maintenance practices are used, the hexane content of the meal existing in the desolventizer-toaster can be reduced substantially.

## CATEGORY III - OXIDES OF NITROGEN

### Electric Utility Gas Turbines

A gas turbine is a rotary engine which consists typically of a compressor and combustion chambers where liquid or gaseous fuel is burned. A turbine drives both the compressor and a generator. The electric utility companies generally use gas turbines to generate power during peak loads. The quantity of emissions from utility gas turbines can be reduced by both wet and dry techniques used either individually or together. The wet technique consists of injecting steam or water into the combustion process. The dry techniques for NO<sub>x</sub> emissions reduction from gas turbines are: air staging and redistribution, fuel vaporization, fuel staging, two stage combustion, off stoichiometric combustion, premixing of the air and fuel, variable combustor geometry, larger external combustion chamber, and catalytic reduction. Depending upon the design of the gas turbine, one or more control techniques can be applied to achieve varying degrees of emission control.

### Glass Melting Furnaces

This model rule would be applicable to glass melting furnaces producing glass for container and flat glass manufacture and would exclude fiberglass. This measure will require that glass melting furnaces reduce emissions on the order of 90 percent by using selective catalytic reduction with ammonia. Interim reductions of smaller magnitude can be obtained through operational modifications which will vary for each furnace depending upon its age, condition, and current operations.

There is currently a wide variation in emission levels from glass melting furnaces of similar sizes, ages, and products, indicating that differences in operation can account for differences in emission rates. Depending on the particular furnace, many factors would have to be investigated in order to determine which parameters should be varied to reduce NOx emissions. Selective catalytic reduction (SCR) with ammonia is a technology which has been applied with success to many types of flue gas streams, including those from glass melting furnaces. SCR reactors have been fitted to a container glass furnace and to a slipstream from a flat glass furnace in Japan. Results from these projects prove the viability of this technology in this application, although greater operating experience would be desirable. A pilot scale demonstration plant operating successfully for about six months would provide the necessary data to allow full scale implementation of this technology.

#### Refinery Heaters, Boilers, CO Boilers, and CO Furnaces

Refinery heaters and boilers are fired with conventional fuels and are used to generate heat to process fluids. Refinery CO boilers or furnaces are fired with waste gas from fluid catalytic cracking regenerator and/or fluid coking units and transfer heat from combustion gases to process fluids. Such a boiler or furnace may or may not be fired with auxiliary fuel. Refinery heaters generally have capacities in a range of approximately 10-80 million Btu/hr; refinery boilers generally have capacities in a range of approximately 20-200 million Btu/hr; and CO boilers or furnaces generally have capacities greater than 300 million Btu/hr. Because of wide range in sizes, the emission control techniques and cost-effectiveness will be highly variable, depending upon the particular unit. A variety of control techniques, including combustion modifications, low NOx burners, fuel modifications, and both catalytic and noncatalytic ammonia injection can be used to achieve a varying degree of emission control cost-effectively.

### CATEGORY III - OXIDES OF SULFUR

#### Electric Utility Boilers

The Sulfur Dioxide/Sulfate Control Study done by the SCAQMD proposed a 60% SO<sub>2</sub> reduction from power plants based on the use of 0.1 percent by weight sulfur fuel oil and an 88 percent SO<sub>2</sub> reduction from power plants by employing multi-staged scrubbers and 0.25 percent by weight sulfur fuel oil. The technologies of wet scrubbers, dry absorbers, precoated baghouses, and hydrodesulfurization of fuel oil are currently available.

#### Sulfuric Acid Plants

One method of sulfuric acid manufacture is from refinery waste products containing H<sub>2</sub>S, spent acid, and molten sulfur. The SO<sub>2</sub> may also be produced by burning sulfur. Input materials are burned with air in a furnace to produce SO<sub>2</sub>. The SO<sub>2</sub> is passed through a catalytic convertor

for conversion to  $\text{SO}_3$ . The  $\text{SO}_3$  is then absorbed in sulfuric acid and converted to sulfuric acid product. Single stage convertors result in 90-95 percent conversion of the feed sulfur to acid. Conversion efficiency can be improved by double stages of both conversion and absorption to reduce emissions and increase production. Scrubbers, precipitators, and mist eliminators are used for further reduction of emissions.

A basic method of control is to add an additional set of catalytic convertor/absorber equipment and this is termed a "double conversion/double absorption" or "double contact process." This process can improve removal efficiencies up to about 99.9%. The increased acid production rate may pay the cost of added equipment.



## CATEGORY IV - ORGANIC COMPOUNDS

### Automotive Refinishing

Organic emissions from the coating operations of automotive refinishing is directly attributed to the volatile organic compound which is formulated in the coating itself. These coatings must cure at ambient temperatures as the emission loss comes directly from the evaporation of the solvents. No control techniques are currently being practiced.

Controls of organic emissions from automotive refinishers can be technically achieved by either low solvent coatings or some form of control equipment.

### Marine Vessel Operations

Organic gases are displaced from marine tankers during the loading of volatile organic liquids such as crude oil or gasoline. In addition, organic gases are displaced during purging, tank washing, gas-freeing, and ballasting operations. The Board has approved in principle a model rule which would require that emissions resulting from the loading of tank vessels be reduced to 5 percent or less of the amount which would be emitted without controls. The model rule would provide that organic gas emissions need not be reduced below 2 pounds per thousand barrels of organic liquid loading. The rule would also require that vessels carrying organic liquids refrain from the emission of organic gases during operations other than loading, such as tank washing, gas-freeing, and ballasting. Control of loading emissions would be accomplished by incineration of displaced vapors or by vapor recovery techniques such as carbon adsorption, lean oil absorption, hybrid systems involving the above techniques, or other vapor control technologies. Ballasting emissions would be eliminated by the use of vapor balance techniques or by the use of segregated ballast tanks. Emissions from purging, gas-freeing, and tank washing operations would be eliminated by conducting such operations outside California Coastal Waters. The staff will hold workshops before June 1979 and modify the model rule to ensure that no hardships occur.

### Oil Production Well Vents Under Steam Stimulation

Steam vented from oil wells being subjected to thermally enhanced oil recovery stimulation contains entrained organic gases. Some molecular species of organic gas can be condensed with air cooled fin-type condensers. Low molecular weight organic gases may be recoverable with conventional gas-liquid separators and knockout pots. The organic gases could then be sent to flare or fuel. The control measure would require application of such controls to all significant well vent emissions.

### Organic Waste Solvent Disposal

Solvent reclamation is considered to be the most appropriate method to reduce emissions from the evaporation of organic waste solvent. Reclamation can be provided through a private contractor or through in-house distillation. Private contractors usually collect and distill waste solvent and then return the reclaimed portion for a fee equal to approximately one half the market value of the solvent.

### Valves and Flanges at Oil Production Fields

This measure would require implementation of a maintenance and inspection program. Available data indicate that emissions from flanges are small and are probably controlled adequately by water pollution control authorities. A quarterly inspection program for liquid and gas service valves would assure periodic attention to all valves by testing for leaks at the stem and bonnet. All leaks should be repaired within 24 hours or, if repair would require the shut-down of a well or major process unit, during the next unit shut-down. Each valve would be required to have an affixed record of inspections. The inspection requirement will be in addition to a basic no leak requirement. Some valves in gas service may require more than quarterly inspection and maintenance.

### Wood Furniture

This tactic would require the use of low-solvent coatings, add-on control equipment, or any combination thereof which will effectively reduce organic emissions.

## CATEGORY IV - OXIDES OF NITROGEN

### Cement Manufacturing Kilns

Combustion modification, burner modifications, catalytic combustion or catalytic removal of NO<sub>x</sub>.

### Electric Utility Boilers

Previously described in Category I.

### Industrial and Commercial Boilers

Combustion modification, burner modifications, catalytic combustion or catalytic removal of NO<sub>x</sub>.

## CATEGORY IV - OXIDES OF SULFUR

### Cement Manufacturing Kilns

This measure will control SO<sub>x</sub> emissions by one or more of the following techniques: limiting sulfur in fuel, control of the alkali content of

raw materials, installation of scrubbers, increased efficiency, or increased interaction of flue gas and alkali materials.

#### Coke Calcining

Previously described in Category I.

#### Electric Utility Turbines

A gas turbine is a rotary engine which consists typically of one or more compressor stages, one or more combustion chambers where liquid or gaseous fuel is burned, one or more turbines to drive the compressor(s), and a power turbine to drive the generator. The electric utility companies generally use gas turbines to generate power during the peak loads. The size of the utility gas turbines generally range from approximately 15 MW to 60 MW.

A SCAQMD proposed tactic will require distillate fuel having a sulfur content less than 0.05%. Local refineries will make the fuel available either by using selective cuts of low sulfur crude oils or by desulfurizing middle distillate or gas oil feedstocks.

#### Electric Utility Combined Cycle Plants

A combined cycle plant is a simple gas turbine with the hot exhaust gases vented through a waste heat recovery boiler. Steam generated in the waste heat recovery boiler is used to generate electricity using a conventional steam turbine. Some waste heat recovery boilers are designed to permit generation of additional steam by burning conventional fuels in a firebox to supplement the heat from the hot exhaust gases. The techniques to control SO<sub>x</sub> emissions from gas turbines are discussed in the evaluation of gas turbines, and techniques to control SO<sub>x</sub> emissions from waste heat recovery boilers (if auxiliary fuel is burned\*) are discussed in the evaluation of utility boilers.

#### Marine Vessels

This measure would require that, with some exceptions, bunker fuels used by marine vessels while in California Coastal Waters have a sulfur content not greater than 0.5 percent by weight. Marine vessels operating in California Coastal Waters currently burn fuels with sulfur contents of 2-3 percent by weight. The measure would allow vessels to burn fuels having a sulfur content greater than 0.5 percent by weight if the exhaust gases are treated to reduce sulfur oxide emissions to the amount which would be emitted if 0.5 percent sulfur fuel were burned.

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\*Combined cycle power plant in San Diego burns auxiliary fuel.

### Sulfur in Fuel

This measure will reduce SO<sub>x</sub> emissions by limiting the allowable sulfur content of fuel oil. Low sulfur in fuel oil (0.25% Wt. S or less) is a reasonably available control tactic for certain districts.

### Sulfur Recovery Plants

Various refinery processes are used to remove sulfur from the products and from refinery gas burned for process heat. The primary form of the sulfur is in acid gases as H<sub>2</sub>S which can be converted to salable pure sulfur by the Claus process.<sup>2</sup> Conversion of the typical Claus plant is 90 to 96% of the inlet sulfur converted to sulfur product. The unconverted sulfur results in large concentrations of SO<sub>2</sub>. The installation of tail gas SO<sub>2</sub> extraction units can reduce SO<sub>x</sub> to 250 ppm or lower and H<sub>2</sub>S to 10 ppm.

## CATEGORY IV - PARTICULATE MATTER

### Fossil Fuel-Fired Utility Boilers

Fossil fuel fired external combustion utility boilers are used to convert water to steam. The steam is used to drive a turbine which in turn drives an electrical generator. Utility boilers in California range in size from 20 to 800 net megawatts and are primarily fired with residual oil. It is anticipated that by 1985 the use of gas fuel in utility boilers will be essentially zero. Annual residual oil consumption can vary from 40,000 barrels for peaking units to 4 million barrels for base loaded units. Particulate matter emissions will vary with fuel properties, e.g., ash and sulfur content, and boiler operating parameters such as combustion modification, load changing, and soot removal practices.

The most attractive particulate matter control systems for oil-fired boilers are electrostatic precipitators and baghouses. Control efficiencies for ESPs have been reported on the order of 95 to 99 percent for coal-fired utility boilers but it is anticipated that these efficiencies may not be realized on oil-fired boilers because of relatively low inlet grain loading (compared to coal-firing) and the high resistivity of combustion particles. Baghouse efficiencies have been reported as high as 99.8 percent on coal-fired boilers. If baghouses are used on oil-fired boilers, additives such as calcium carbonate may have to be injected into the flue gas to minimize corrosion of the filter fabrics and build-up a filter cake sufficient to remove sub-micron particles.

It has been reported that up to 85 percent of the particulate matter generated during oil firing is in the sub-micron range, thus control equipment would probably have to be designed for allowable outlet particle loading rather than overall control equipment efficiency.

## CATEGORY V - ORGANIC COMPOUNDS

### Fixed Roof Tanks at Oil Production Fields

Same as controls for fixed roof tanks at refineries, terminals, and other facilities.

### Floating Roof Tanks at Oil Production Fields

A small number of tanks for the storage of organic liquids in oil production fields are equipped with external roofs floating on the surface of the liquid inside the tank. Emissions can be reduced by employing a closure device to seal the gap between the tank shell and the floating roof. The Air Resources Board has developed a model rule containing roof seal gap criteria for floating roof tanks used in oil refineries, terminals, and other facilities. Staff proposes that this rule or a similar rule be applied to floating roof tanks in oil production operations.

### Secondary Oil/Water Separation Operations at Petroleum Refineries

This measure would apply to (1) devices which physically separate oil from refinery waste water by agitation or other means of introducing and dispersing air or other gas in the water and which receive effluent water from any other oil-water separation device and (2) ponds whose residence time exceeds a specified amount and which receive effluent water from any other oil-water separation device. The measure would prohibit the operation of the device in (1), commonly called a dissolved air flotation (DAF) unit, or the pond in (2) without a cover if the total hydrocarbon content of waters entering the pond or DAF unit averages over a specified level during any 24-hour period, and if the pond or DAF unit receives more than a specified amount of waste water per day. The cover required by this measure would fit so as to allow a gap at the wall of the DAF or pond of no more than a specified amount.

## CATEGORY V - OXIDES OF NITROGEN

### Electric Utility Combined Cycle Plant

A combined cycle plant is a simple gas turbine with the hot exhaust gases vented through a waste heat recovery boiler. Steam generated in the waste heat recovery boiler is used to generate electricity using a conventional steam turbine. Some waste heat recovery boilers are designed to permit generation of additional steam by burning conventional fuels in a firebox to supplement the heat from the hot exhaust gases. The techniques to control NO<sub>x</sub> emissions from gas turbines are discussed in a previous section. Techniques to control NO<sub>x</sub> emissions from waste heat recovery boilers (if auxiliary fuel is burned) are discussed in sections covering refinery boilers and heaters, oil field steam generators, and electric utility boilers.

### Refinery Heaters, Boilers, CO Boilers, and CO Furnaces

Previously described in Category I.

### Secondary Metal Furnaces

A description of this rule was not available at the time of printing.

### Water Heaters

A description of this rule was not available at the time of printing.

## CATEGORY V - OXIDES OF SULFUR

### Electric Utility Boilers

Previously described in Category III.

### Fluid Catalytic Cracking (FCC) Units

Various petroleum feedstocks are mixed with a catalyst and treated at elevated temperatures and pressures to produce more valuable products, such as gasoline and diesel fuels. The catalyst is regenerated by heating at high temperatures to remove deposits that adsorb to the catalyst surface. Resulting emissions from the regenerator include sulfur oxides that are emitted to the atmosphere. Three primary process modifications for SO<sub>x</sub> reduction from FCC units are:

1. Increased stripping steam
2. Use of improved catalyst
3. Feed desulfurization

Control methods also exist for 90 percent SO<sub>2</sub> reduction using flue gas desulfurization.

### Sulfur in Fuel

Previously described in Category IV.

## CATEGORY V - PARTICULATE MATTER

### Fossil Fuel-Fired Utility Boilers

Previously described in Category IV.

## CATEGORY VI - ORGANIC COMPOUNDS

### Chemical Manufacturing

A description of this rule was not available at the time of printing.

### Pesticides

A description of this rule was not available at the time of printing.

### Flat Woodstock

A description of this rule was not available at the time of printing.

## CATEGORY VI - OXIDES OF SULFUR

### Catalytic Cracking Units

Previously described in Category V.

### Electric Utility Boilers

Previously described in Category III.

### Fluid Cokers

Coking is a thermal cracking process in which crude residue is cracked at high temperature and low pressure into lighter products and petroleum coke. The crude residue is mixed with recycled hot coke particles in the reactor. The volatile (hydrocarbon) portion of the liquid feed cracks and evaporates while the non-volatile (carbon) material is deposited on the suspended (fluidized) coke particles. The coke particles thus grow in size, sink to the bottom of the reactor and flow to the burner. In the burner, the particles are fluidized with air, partially burned, and recycled back into the reactor.  $\text{SO}_2$  is emitted from the burner. Emission control equipment is similar to that used with FCC units (except for catalyst replacement which is not a control option for fluid cokers). Control methods exist for 90% of  $\text{SO}_2$  reduction.

### $\text{H}_2\text{S}$ Flares (in oil field)

Hydrogen sulfide gas is collected from a water separation process which separates crude oil and water after crude oil has been pumped out of the oil well. The collected  $\text{H}_2\text{S}$  concentration can be 1000 ppm or even higher and varies from well to well.  $\text{H}_2\text{S}$  along with hydrocarbon vapor goes to flares for combustion. In SCAQMD and South Santa Barbara,  $\text{H}_2\text{S}$  flares comply with Rules 431 and 32, respectively.  $\text{H}_2\text{S}$  flares in North Santa Barbara (Santa Maria) do not comply with any rule.

Sulfur in Fuel

Previously described in Category IV.

Sulfur Recovery Units

Previously described in Category IV.

OXIDES OF NITROGEN

Electric Utility Boilers

Previously described in Category I.

PARTICULATE MATTER

Fossil Fuel-Fired Utility Boilers

Previously described in Category IV.



APPENDIX A  
STATE OF CALIFORNIA  
AIR RESOURCES BOARD  
LOCAL AIR POLLUTION CONTROL DISTRICTS  
IN CALIFORNIA

AMADOR COUNTY APCD  
(Mountain Counties)

Amador County APCD  
810 Court Street  
Jackson, CA 95642  
(209) 223-1696

BAY AREA AQMD  
(San Francisco Bay Area)

Bay Area AQMD  
939 Ellis Street  
San Francisco, CA 94109  
(415) 771-6000

BUTTE COUNTY APCD  
(Sacramento Valley)

Butte County APCD  
P.O. Box 1229  
316 Nelson Avenue  
Oroville, CA 95965  
(916) 534-4381

CALAVERAS COUNTY APCD  
(Mountain Counties)

Calaveras County APCD  
Government Center  
El Dorado Road  
San Andreas, CA 95249  
(209) 754-4251

COLUSA COUNTY APCD  
(Sacramento Valley)

Colusa County APCD  
751 Fremont Street  
Colusa, CA 95952 ← Reddick  
(916) 458-5891 3

DEL NORTE COUNTY APCD  
(North Coast)

Del Norte County APCD  
909 Highway - 101 North  
Crescent City, CA 95531  
(707) 464-4011

EL DORADO COUNTY APCD  
(Lake Tahoe & Mountain Counties)

El Dorado County APCD  
330 Fair Lane  
Placerville, CA 95667  
(916) 626-2407

FRESNO COUNTY APCD  
(San Joaquin Valley)

Fresno County APCD  
P.O. Box 11867  
1246 L Street  
Fresno, CA 93775  
(209) 488-3743

GLENN COUNTY APCD  
(Sacramento Valley)

Glenn County APCD  
P.O. Box 351  
777 North Colusa Street  
Willows, CA 95988  
(916) 934-4651

GREAT BASIN UNIFIED APCD  
(Great Basin Valley)

Great Basin Unified APCD  
873 North Main Street, Suite 213  
Bishop, CA 93514  
(714) 872-8211

HUMBOLDT COUNTY APCD  
(North Coast)

Humboldt County APCD  
5600 South Broadway  
Eureka, CA 95501  
(707) 443-3093

IMPERIAL COUNTY APCD  
(Southeast Desert)

Imperial County APCD  
County Services Building  
940 West Main Street  
El Centro, CA 92243  
(714) 352-3610 Ext. 240

KERN COUNTY APCD  
(San Joaquin Valley & Southeast Desert)

Kern County APCD  
1601 H Street, Suite 250  
1700 Flower Street  
Bakersfield, CA 93301  
(805) 861-3682

KINGS COUNTY APCD  
(San Joaquin Valley)

Kings County APCD  
330 Campus Drive  
Hanford, CA 93230  
(209) 584-1411 Ext. 2606

LAKE COUNTY APCD  
(Lake County)

Lake County APCD  
255 North Forbes Street  
Lakeport, CA 95453  
(707) 263-2391

LASSEN COUNTY APCD  
(Northeast Plateau)

Lassen County APCD  
175 Russell Avenue  
Susanville, CA 96130  
(916) 257-3526

LOS ANGELES COUNTY APCD  
(Southeast Desert)

District Headquarters  
South Coast Air Quality  
Management District  
9420 Telstar Avenue  
El Monte, CA 91731  
(213) 443-3931 Ext. 210

MADERA COUNTY APCD  
(San Joaquin Valley)

Madera County APCD  
135 West Yosemite Avenue  
Madera, CA 93637  
(209) 674-4641 Ext. 260

MARIPOSA COUNTY APCD  
(Mountain Counties)

Mariposa County APCD  
P.O. Box 5  
Mariposa, CA 95338  
(209) 966-3689

MENDOCINO COUNTY APCD  
(North Coast)

Mendocino County APCD  
Courthouse Square  
Ukiah, CA 95482  
(707) 468-4465

MERCED COUNTY APCD  
(San Joaquin Valley)

Merced County APCD  
P.O. Box 471 or 1350  
240 East 15th Street  
Merced, CA 95340  
(209) 726-7391

MODOC COUNTY APCD  
(Northeast Plateau)

Modoc County APCD  
202 West 4th Street  
Alturas, CA 96101  
(916) 233-2225

MONTEREY BAY UNIFIED APCD  
(North Central Coast)

Monterey Bay Unified APCD  
1270 Natividad Road, Room 105  
Salinas, CA 93906  
(408) 758-3861

NEVADA COUNTY APCD  
(Mountain Counties)

Nevada County APCD  
H.E.W. Complex  
Nevada City, CA 95959  
(916) 265-2461 Ext. 264

NORTHERN SONOMA COUNTY APCD  
(North Coast)

Northern Sonoma County APCD  
141 North Street  
Healdsburg, CA 95448  
(707) 433-5911

PLACER COUNTY APCD  
(Lake Tahoe & Mountain Counties)

Placer County APCD  
11491 "B" Avenue  
Auburn, CA 95603

PLUMAS COUNTY APCD  
(Mountain Counties)

Plumas County APCD  
P.O. Box 480  
Quincy, CA 95971  
(916) 283-1256

SACRAMENTO COUNTY APCD  
(Sacramento Valley)

Sacramento County APCD  
3701 Branch Center Road  
Sacramento, CA 95827  
(916) 366-2176

SAN BERNARDINO COUNTY APCD  
(Southeast Desert)

District Headquarters  
South Coast Air Quality  
Management District  
9420 Telstar Avenue  
El Monte, CA 91731  
(213) 443-3931 Ext. 210

SAN DIEGO COUNTY APCD  
(San Diego)

San Diego County APCD  
9150 Chesapeake Drive  
San Diego, CA 92123  
(714) 565-5900

SAN JOAQUIN COUNTY APCD  
(San Joaquin Valley)

San Joaquin County APCD  
P.O. Box 2009  
1601 East Hazelton Avenue  
Stockton, CA 95201  
(209) 466-6781

SAN LUIS OBISPO COUNTY APCD  
(South Central Coast)

San Luis Obispo County APCD  
P.O. Box 637  
San Luis Obispo, CA 93406  
(805) 543-1550 Ext. 327

SANTA BARBARA COUNTY APCD  
(South Central Coast)

Santa Barbara County APCD  
4440 Calle Real  
Santa Barbara, CA 93110  
(805) 964-8848 Ext. 399

SHASTA COUNTY APCD  
(Northeast Plateau & Sacramento Valley)

Shasta County APCD  
1855 Placer Street  
Redding, CA 96001  
(916) 246-5674

SIERRA COUNTY APCD  
(Mountain Counties)

Sierra County APCD  
County Courthouse  
Downieville, CA 95936  
(916) 289-3271 Ext. 38

SISKIYOU COUNTY APCD  
(Northeast Plateau)

Siskiyou County APCD  
525 South Foothill Drive  
Yreka, CA 96097  
(916) 842-3906

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT  
(South Coast)

District Headquarters  
South Coast Air Quality  
Management District  
9420 Telstar Avenue  
El Monte, CA 91731  
(213) 443-3931 Ext. 210

STANISLAUS COUNTY APCD  
(San Joaquin Valley)

Stanislaus County APCD  
820 Scenic Drive  
Modesto, CA 95350  
(209) 526-6892

SUTTER COUNTY APCD  
(Sacramento Valley)

Sutter County APCD  
Sutter County Office Building  
142 Garden Highway  
Yuba City, CA 95991  
(916) 674-2851

TEHAMA COUNTY APCD  
(Sacramento Valley)

Tehama County APCD  
P.O. Box 38  
1760 Walnut Street  
Red Bluff, CA 96080  
(916) 527-4504

TRINITY COUNTY APCD  
(North Coast)

Trinity County APCD  
P.O. Drawer AK  
Weaverville, CA 96093  
(916) 623-5195 - Courthouse  
(916) 623-2271 - Office

YUBA COUNTY APCD  
(Sacramento Valley)

Yuba County APCD  
938 14th Street  
Marysville, CA 95901  
(916) 674-6484

TULARE COUNTY APCD  
(San Joaquin Valley)

Tulare County APCD  
Health Building  
County Civic Center  
Visalia, CA 93277  
(209) 733-6471

TUOLUMNE COUNTY APCD  
(Mountain Counties)

Tuolumne County APCD  
9 North Washington Street  
Sonora, CA 95370  
(209) 532-7732

VENTURA COUNTY APCD  
(South Central Coast)

Ventura County APCD  
800 South Victoria Avenue  
Ventura, CA 93009  
(805) 654-2662

YOLO-SOLANO APCD  
(Sacramento Valley)

Yolo-Solano APCD  
P.O. Box 1006  
323 First Street, #5  
Woodland, CA 95695  
(916) 666-8433